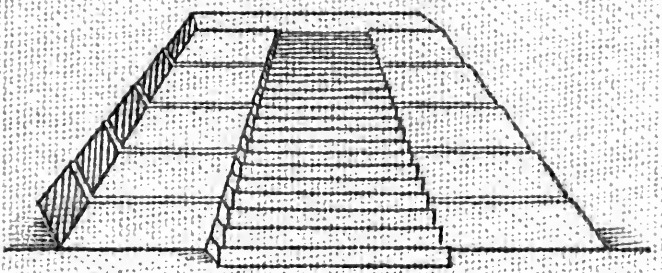

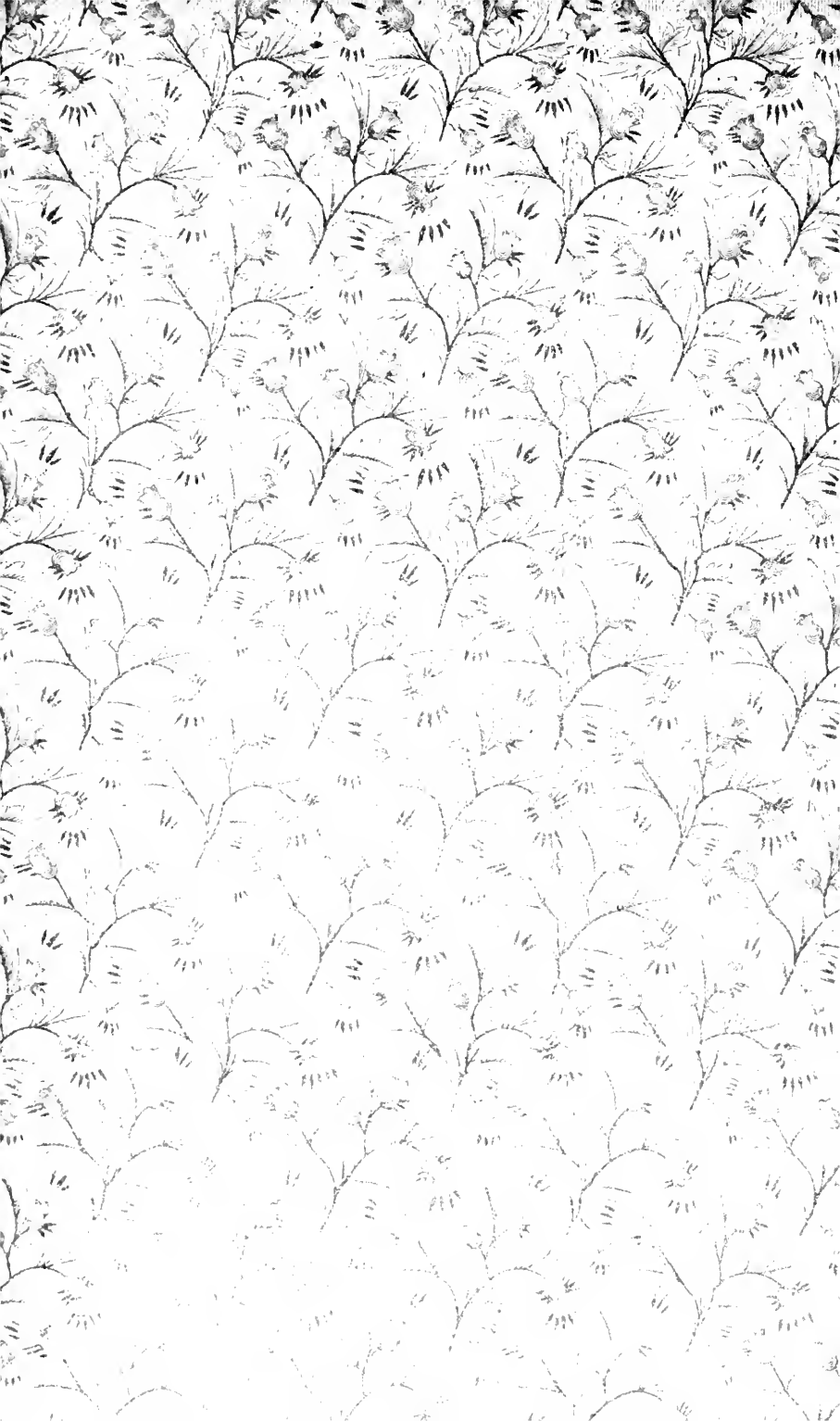

INTRODUCTION

TO THE

Study of North American Archaeology.

BY

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Author of "Report on Mound Explorations" (Twelfth Annual Report of the Bureau of American Ethnology); "Catalogue of Prehistoric Works East of the Rocky Mountains"; "A Study of the Manuscript Troano"; "Burial Mounds of the Northern Sections of the United States"; "Aids to the Study of the Maya Codices"; "Notes on Certain Maya and Mexican Manuscripts"; "Problem of the Ohio Mounds"; "The Cherokees in Pre-Columbian Times"; etc.

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TO

MAJOR JOHN WESLEY POWELL,

To whose efficient work as Director of the Bureau of American Ethnology
students of ethnology are so largely indebted
for the recent additions made to the data relating to North America;
and to whose aid and encouragement
is mainly due whatever success the writer may have achieved
in his special line,

This work is respectfully dedicated

BY THE AUTHOR.

PREFACE.

The little volume herewith presented to the public is a brief resumé of the progress which has been made, up to the present time, in the investigation and study of North American archaeology. The increased activity among students devoting attention to the subject, the numerous explorations made, the rapid accumulation of data and the flood of light thrown on the questions relating to prehistoric North America since the publication of the last general work relating thereto, call for a new summary. Whether the work now offered meets this demand must be left for the readers to decide. That some parts of the broad field have been left unnoticed is admitted, the attention being confined chiefly to the more important characteristic features, as those best calculated to form an INTRODUCTION to the subject; and as best calculated to interest the reader and younger students. With such an object in view, pages broken or interrupted by foot-notes are not only out of place, but often serve to break the thread the reader is following, or prove an interruption to his line of thought; reference notes have therefore been entirely omitted.

The opinion held by Maj. J. W. Powell that the

Indians found inhabiting the Atlantic division of North America and their ancestors were the builders of the mounds in that region, which the explorations of the Bureau of American Ethnology under his charge have done much to confirm, has been adopted. And, in general, the conclusions reached by the Bureau of American Ethnology in reference to questions relating to language and archaeology, so far as these extend, have been accepted and used as a basis for further steps in the investigation. But the author alone must be held responsible for any views advanced herein which have not been generally accepted, or in regard to which there are different opinions.

I take pleasure in acknowledging here the favors I have received from Maj. J. W. Powell, Director of the Bureau of American Ethnology, and Prof. W. J. McGee, Ethnologist in Charge, in the use of books, pamphlets and other literary aids needed in my work, and the privilege of obtaining numerous electrotypes of the illustrations herein used, favors, however, which have always been willingly extended to all coworkers. I also wish to acknowledge the favors received from Prof. W. H. Holmes, in the privilege of copying illustrations of and profuse borrowing from his late work on the cities of Mexico, published by the Field Columbian Museum; also to Mr. F. W. Hodge, of the Bureau of American Ethnology, for information communicated and papers furnished relating to the

Pueblo region. In addition to the illustrations obtained from the Bureau publications, others have been copied from figures in the U. S. Geological Survey, National Museum, etc. Acknowledgment to the various authors from whose works information has been drawn will be found in the text, the authors' names from whose works and papers illustrations have been obtained either directly or indirectly, are added after the numbers in the list of illustrations, the original being referred to where it is possible. The numbers in the list of illustrations not followed by the author's name are either original figures, modifications of other figures, or theoretical restorations by the present writer.

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INTRODUCTION

TO THE

Study of North American Archaeology.

CHAPTER I.

PRELIMINARY OBSERVATIONS.

Archaeology in its widest sense and by derivation includes the investigation of the origin, language, beliefs, customs, arts—every thing, in a word, that can be learned of the ancient life of a people. It is in this sense that it is used in the title of this work, and not in the more limited scope to which its modern use has a tendency to restrict it, notwithstanding the efforts of lexicographers to retain its original meaning. The work is intended really as an introduction to the study of prehistoric North America, of the people as well as the monuments. To gather and describe antiquities, although thoroughly and intelligently done, is by no means all of archaeology. True, these are to archaeology what the unfashioned and unadjusted materials of which the house is to be built are to the house, but they are not the house. The monuments are the tombs of past ages; the work of archaeology in its broad sense is to revivify the dead, to put life into the past, and, so far as possible, to bring before

the mind the ancient people with their activities, characteristics and customs. In other words, the chief object in view in the study of archaeology is the man of bygone ages. It is with this idea in view that this Introduction to the Study of North American Archaeology has been written, but only as an *introduction*, for the field is too broad to be covered in one small volume.

The problems which confront the student of American archaeology are exceedingly difficult, and some of them seemingly beyond the possibility of solution because of the sheer break between the historic and prehistoric eras. Omitting the discovery of Greenland and possibly the north-east coast of the continent by the Northmen in the tenth or eleventh century, which left no impress, the history of the western world begins with the discovery of the West Indies by Columbus in 1492; all that lie back of that date belong to the prehistoric era, a gloom, so to speak, unlightened by a single deciphered page of history. In the Old World there are few regions in regard to whose past there are no recorded hints which can be used as stepping stones in the backward march; in other words, history and prehistory are dovetailed, so to speak, one with another, but not so in the New World.

These difficulties have possibly caused more than one student to feel as Palgrave, who, in apparent despair over the unsatisfactory results of the efforts, up to his day, to lift the veil which shuts out the past, exclaims: "We must give it up, that speechless past; whether fact or chronology, doctrine or mythology; whether in Europe, Asia, Africa or America; at

Thebes or Palenque, on Lycian shore or Salisbury Plains; lost is lost, gone is gone forever." But a different spirit animates the students of the present day, the very difficulties in the way are themselves so many incentives to attacks. What seemed beyond human reach to the London antiquary and historian sixty years ago, is deemed by scholars of the closing years of the nineteenth century to be, in a large degree, attainable. The veil, which Palgrave looked upon as fixed and immovable, has been lifted at numerous points and rays of light let in upon the past. Some of the problems which were, fifty years ago, yea, but twenty-five, deemed impossible of solution, have been satisfactorily solved, and have now become foundation stones in the archaeological structure.

It is true, as Sir John Lubbock remarks: "In attempting to reconstruct the story of the past, students have too often allowed imagination to usurp the place of research, and have written in the spirit of the novelist rather than in that of the philosopher." The hundreds of dust-covered works on the subject of pre-Columbian America, and the origin of its people, which now lie, well nigh forgotten, on the shelves of libraries, bear testimony to the truth of this remark, as do also the numerous discarded theories relating thereto. Nevertheless theories will continue to be advanced, indeed must be if progress is made in the study of the past, especially where so many links of the chain are still wanting as in American archaeology. The investigating spirit of the age will not brook delay; wherever there is an unbroken field some scientific plow is sure to enter, though but poorly equipped for the work. However, of late years more

strict methods of approaching the many problems involved have been introduced, and now, instead of attempting by imagination or theorizing to reach conclusions at once, slow and patient investigation is the process pursued. The spade has to a large extent replaced the pen, and instead of building theories chiefly by imagination, there is a careful sifting of all the evidence which appears to have any bearing on the subject. The fragments of data are fitted together and tentative theories deduced simply as a plan of further progress, often however to be cast aside or modified, as new material, which will not readily drop into place, is discovered.

As no intelligent student will continue his investigations of the ancient monuments for any considerable length of time without forming theories in regard to the uses, age and authors of the works examined, it is all important to his progress to know which of the questions that arise have been completely or partially answered, and to ascertain which of the numerous theories advanced in regard to the various questions have been definitely eliminated by universal consent from the class possessing elements of possibility. This knowledge will clear from his pathway much of the rubbish which would otherwise encumber it. Another important point is to know the lines along which the opposing views are being pushed by their respective advocates. Although it is undoubtedly the part of wisdom to hold in restraint the disposition to theorize, this knowledge directs the careful student's attention to numerous points which might otherwise be overlooked in his investigations. It is for this reason that the author of this little work has ventured

to briefly outline the theories relating to some of the more important problems which must confront the student of American archaeology. The chief object, however, will be to present the data, and to arrange them so as to afford the student some means of bringing into harmony and utilizing his facts and materials. But as it is manifestly impossible to present in a single small volume a full account of the archaeologic remains of the continent, and discuss all the questions which arise in connection therewith, only those considered the best representatives of the leading types and those which best illustrate the art, customs and culture status of the former inhabitants will be referred to.

The writer, as those who peruse this work will observe, has not entered into a discussion of the question of the so-called paleolithic age, or glacial man in America, for the reason that he does not believe the evidence on which the theory is based, as yet sufficient to justify its acceptance. The results of the more recent investigations in America, or at least North America, all tend in the other direction. One by one the strongholds of the advocates are being overturned, and the evidence on which the theory is based discounted. The author feels constrained to the belief that peopled America though old in years bears nowhere such marks of antiquity as are to be found in some parts of the Eastern Continent. To accept the antiquity which has been assigned by the advocates of this theory to the early inhabitants would, as the writer thinks, require in order to be consistent an entire recasting of all the more stable theories which have been propounded. "Paleolithic" as a descriptive

term is of minor importance, but as a theory which would carry back the presence of man in America to that immensely distant era which has been assigned is a very different thing.

Mr. Keary remarks in the opening paragraph of the second chapter of his "Dawn of History" that "Between the earlier and later stone age, between man of the drift period and man of the neolithic era occurs a vast blank which we can not fill in. We bid adieu to the primitive inhabitants of our earth while they are still the contemporaries of the mammoth and woolly rhinoceros, or of the cave lion and the cave bear, and while the very surface of the earth wears a different aspect from what it now wears. With a changed condition of things, with a race of animals which differed not essentially from those known to us, and with a settled conformation of lands and seas not again to be departed from, comes before us the second race of man—man of the polished stone age." It is true that it is claimed by some European authors that this hiatus is not so real as it at first appears to be, and that it has been partially bridged over by some recent finds. But the effort to bridge the chasm shows too clearly to be misunderstood that it is there, and so long as it remains unclosed is a weak point, if not fatal flaw, in the theory.

We accept as correct the idea advanced by Mr. A. H. Keane in his "Ethnology," that appeal to traditional movements and other traditional data will have no bearing upon the question of the origin of the people of America unless paleolithic man in America is abandoned. So believing, though we do not propose to discuss this question of the original peopling

of the continent, we put aside glacial or paleolithic man of America as yet wanting in the credentials which entitle him to a place in scientific circles.

The history of the western continent is supposed to begin with its discovery by Columbus at the close of the fifteenth century, all that antedate that event being considered prehistoric. While this is true in the broad and general sense in which it is used, yet, strictly speaking, the history of the different sections begins with the first knowledge of them obtained by Europeans. Hence the border line between the historic and prehistoric eras varies in date according to the section referred to. The Ohio valley, for example, was *terra incognita* to the civilized world for a century after Cortez entered the capital of Anahuac. That which lies back of this border line belongs to the prehistoric era, and the student who would penetrate the mystery of that past must examine and carefully study the monuments; listen to the traditions which have floated down the ages; gather the folk-lore tales; and compare the customs, arts, and beliefs of the tribes as first seen and learned. He must study the native form and lineaments, and trace by linguistic evidence the relationship of tribes and groups; for in America there is no scaffolding of history to assist him as in the Old World. The transition from the prehistoric to the historic was, from the very nature of the case, sudden, there being no true proto-historic period.

CHAPTER II.

MATERIALS FOR STUDY—CLASSIFICATION.

When Columbus sailed among the Antilles, Cortez landed on the coast of Mexico, when Jacques Cartier sailed up the St. Lawrence and De Soto traversed the Gulf States, each and all found the regions they visited inhabited by people of a race different from any known to the eastern continent. The discoveries which followed brought to light the fact that the lake region and the Mississippi valley were inhabited by people of the same race. Whence they came, and how long they had inhabited these regions—in other words what was their history—could not be ascertained, as they possessed no historical records save a few symbolic rolls and inscriptions which are as yet sealed books to scientists. The dim and shadowy traditions which they related to the European discoverers were so confused and, in most cases, so fabulous as to throw but little light on these questions. And what was found to be true of the regions mentioned was found to be true in a general sense of the entire continent. The most important variation discovered was the evidence of more advanced culture in certain areas, as Mexico, Central America, and Peru. The people, however, though split into numerous stocks and tribes, and differing in minor respects, belonged apparently to the same race, its members being popularly known as "Indians" or "American Indians."

In these facts we have one fundamental point with which no correct conclusion in regard to the prehistoric times of the continent can be at variance. The natives were here and must be recognized by every theory, must be a factor in every general conclusion.

The chief fundamental factor in the study of archaeology is found in the monuments. "The teachings of material relics," truly remarks one author, "so far as they go, are irrefutable. Real in themselves, they impart an air of reality to the study of the past." These are indisputable products of human activity, and have imprinted upon them, as it were, the ideas and conceptions of a bygone age. They are records in which we may read not only the culture-status of that past age, but also much in regard to the customs and beliefs of the people. For these reasons attention is directed to them as the chief foundation stones on which our archaeological structure must be built.

Although the monuments furnish the chief and most reliable data to the archaeologist, and throw more light on the customs, arts and beliefs of the people, and reveal more in regard to the life of the individual and family than any other aids, they are not the only helps he finds in his endeavor to penetrate the unwritten past. Language, which is also reliable, enables him to determine the affinity of tribes and peoples. By this means he can often say with positive certainty that widely separated tribes or groups have, in the past, sundered relations with the great body of their kindred and sought distant homes. He has ascertained by this means that the

Apaches and Navajos of New Mexico, Arizona, and Northern Mexico are offshoots from the great Athapascan family of Northern British America, and that the Arapahos and Blackfeet Indians of the western plains are members of the Algonquian stock which spread over North America from the Atlantic coast to the Rocky Mountains. Thus he is enabled to trace with more or less accuracy the lines of prehistoric migration, and outline the general trend in ancient movements of population.

Traditions, although less reliable than the monuments and language, furnish some data to the archaeologist which frequently serve to explain otherwise uncertain evidence, and lead to satisfactory conclusions. Folk-lore, mythology and customs sometimes indicate former contact or relationship not otherwise revealed, and explain many otherwise puzzling monuments and relics. Craniology is strongly appealed to by European ethnologists as an important factor in this study, but the results so far obtained, except in cases of artificial pressure, are too unsatisfactory to justify its use except in broad generalizations, and then only as cumulative evidence. This, the writer is well aware, is in conflict with the views of a number of leading ethnologists; nevertheless he feels justified in making this statement deliberately to the younger students of American archaeology.

The wide differences in many respects between the monumental remains of the Old World and those of the New, and also between the data relating thereto, call for a widely different method of study. Even the classification and nomenclature of the former are not adapted to the latter. The arrangement into four

classes or ages—the Paleolithic, Neolithic, Bronze and Iron—is conceded to be inapplicable to America. Evidence of the two stone ages may possibly be found, though still denied by a number of our leading archaeologists, and a copper age may be substituted for the bronze, but the similarity will extend no further. The use of iron as a metal was unknown in America previous to the discovery by Columbus. Copper was used to a limited extent, but it is extremely doubtful whether the method of manufacturing bronze had been discovered at any point on the continent. Stone was the chief reliance until the introduction of European implements. The archaeologic remains of the former, taken as a whole, are so widely different from those of America, that the nomenclature of the one, except as applied to some of the ruder objects, is totally inapplicable to those of the other. It has therefore been found necessary, in studying the archaeology of America, to proceed upon an independent line and to adopt an original basis and a new nomenclature.

Although this limits the range of any classificatory system which may be attempted, it falls far short of doing away with the difficulties the American archaeologist is compelled to encounter. Not only is he confronted by the fact, as apparent in the Old World as in the New, that archaeology, even where it has been longest studied, has not reached that stage where it may be termed a true science, the general principles of which by modification may apply to any section or country, but also by a multiplicity of objects so variant in form and character, and usually in such a fragmentary condition as, without a knowledge of

their uses, to baffle his attempts at a systematic classification. Nadaillac, alluding to the various forms of American antiquities, remarks that "these facts will show how very difficult, not to say impossible, is any classification," a statement which any one who attempts a systematic arrangement will be disposed to accept as true. When dealing with a limited area where the types are somewhat similar, classification to some extent is possible and advantageous, but the attempt to apply it to the entire continent will prove abortive. However, as some grouping is necessary in order to facilitate reference and comparison, in the absence of a scientific arrangement we must have recourse to an arbitrary scheme. As the author has as yet seen no better arrangement of primary groups than that suggested in his "Report on the Mound Explorations of the Bureau of American Ethnology," published in the 12th Annual Report of the Bureau, it is adopted here.

By this the objects are divided, in a broad and comprehensive sense, into three classes.

1. Monuments (in the limited sense), or *local antiquities.* This division or class includes all those antiquities that are fixed or stationary, which necessarily pertain to a particular locality or place.

2. Relics and Remains, or *movable antiquities.* Those not fixed and which have no necessary connection with a particular locality.

3. Paleographic Objects. Inscriptions, picture writings, etc., whether on fixed or transportable objects.

This is, of course, an arbitrary arrangement, the third group being unnecessary except as a matter of convenience; however it appears to be a practical

working system by which the lines of distinction are somewhat rigidly drawn. Moreover it is adapted to the two methods of investigation and study, viz., in the field and in the museum, and is in line with Dr. Moriz Hoernes' suggestion that, in studying archaeological objects, attention should be given to the "Typographic and Museographic order."

The first class does not appear to be susceptible of arrangement into satisfactory primary divisions. The only plan which as yet seems possible is to arrange them by types, chiefly according to form, where the object and use are not apparent, or known.

The objects of the second class may be grouped into two divisions: 1. Remains, including human and animal remains; 2. Relics, including all other movable antiquities. The further division of the second group is largely typological, reference being made to use so far as this is evident.

Partly because of the difficulties in the way of a satisfactory and useful classification, and partly because the chief object of archaeologic investigations is to learn what is possible in regard to the life, character, activities and racial affinity of the former inhabitants of given sections, it has been found most advantageous to study the monuments according to the culture areas, so far as these can be determined approximately from the data which have been obtained.

As it is practically impossible to make any satisfactory classification of the antiquities of the whole continent, further than into the primary classes mentioned above, the order followed herein will, as above intimated, be geographical rather than typological.

The divisions will be made to correspond, so far as the data enable us to judge, to the culture areas. But the attempt to mark the culture areas, except as to the three primary divisions mentioned below, can only be partially carried out, hence the subdivisions must be considered as chiefly geographical and intended more as a matter of convenience and comparison than as archaeological. Nevertheless that there are several culture areas, both in the Atlantic and Pacific divisions, which will be ultimately determined and outlined, is undoubtedly true. It is also true that, even with the data which have been obtained, some of these areas are quite clearly indicated, though they can not be mapped with boundary lines.

The tendency of the present day is to base the efforts to arrange the native population into ethnic groups on the linguistic evidence alone, leaving out of view the important aid in tracing the development of these groups to be derived from a careful study of the archaeological data, or referring to them only when they can be used to confirm the theories based on the linguistic evidence. This arises in part from the fact that, while the archaeological data relating to a large portion of the continent are few, and that archaeology can not, as yet, be considered a true science; on the other hand the linguistic material, although not complete, is much more abundant, and the treatment thereof reduced to true scientific methods. As the latter field affords greater promise of reaching positive conclusions, it is more attractive to methodical students.

As the discussion of this subject from the linguistic standpoint is necessarily based upon the study of the

various linguistic stocks and families of the entire continent, and, to some extent, upon the migrations therein, so the discussion of the same questions from the archaeological standpoint must be based upon the study of the various types and their distribution over the continent. And the same necessity for grouping in some manner arises here as in the linguistic field. Although the materials with which the antiquarian has to deal are not so well defined and distinctly classed as those with which the philologist is concerned, yet careful study and comparison will enable him to note the differences, geographical and to some extent ethnical. The indications of comprehensive archaeological sections as marked by differences in type are too apparent to be denied, and there are also indications of minor districts. The chief drawback in attempting to use these as evidences of ethnic distinctions arises from several causes—uncertainty as to what types are wholly due to physical conditions and what are tribal or ethnic; also from a lack of material for comparison; the overlapping and intermingling of types in consequence of the shifting of position by tribes; and lastly the fact that types of art are not governed strictly by ethnic lines. Nevertheless race characteristics and tribal customs impress themselves to a certain extent under all variations in location and condition, upon the works and art of people in a savage or semi-civilized state. For instance, although the Mexicans and Mayas lived side by side, and used the same calendar system and the same method of enumeration, yet we notice marked differences between their symbolic writings and their types of art. We also notice in the mound section the wide differ

ence between the mound types of Wisconsin and the other portions of the Mississippi valley. However, it is difficult with the data so far obtained to fix correctly the boundaries of the different culture districts.

Although we meet with this difficulty in defining geographically the boundaries of the districts and more comprehensive sections, it does not prevent us from drawing correct conclusions from their general positions and peculiar types. That all the distinguishing types of a district or section can not be attributed to the peculiar physical features of such districts or sections must be admitted. Will any one claim that the vast difference between the archaeologic types of Mexico and Wisconsin have resulted wholly from the physical differences of the two areas? If not, it follows, though physical environment is a potent influence in the formation of types, that so much as has not resulted from physical peculiarities must be attributed to racial or tribal customs. Yet the powerful influence of physical conditions must not be overlooked.

A careful examination of what has been ascertained in regard to North American archaeology, with special reference to the question of archaeologic sections, leads in the first place to the conclusion that the ancient remains belong in a broad and comprehensive sense to two general classes. One of these classes is limited geographically to the Atlantic slope, the other chiefly to the Pacific slope, the eastern or Rocky mountain range of the great continental mountain belt to the Rio Grande forming approximately the dividing line between the two areas. According to this division, the Atlantic section includes that part

of the continent east of the Rocky Mountains and north of the Gulf of Mexico except the Dené or northern Athapascan region, and the Pacific section the remainder from Alaska to the Isthmus of Panama, including the Athapascan territory. The arctic region, or Eskimo area, which is not taken into consideration here, forming a separate division.

While there are manifest and marked differences in the types and characters of the ancient works and remains of different areas within each of these two comprehensive sections, yet when those of the Pacific slope, as a whole, are compared with those of the Atlantic slope, there is a dissimilarity which marks them as the products of different ethnic groups, or as the result of different influences.

If this division into two great archaeologic sections is based on sufficiently reliable data to justify its adoption, it will form a very important landmark in the discussion of the chief problems of the prehistoric times of our continent. Reference to some only of the evidences bearing on this point is made here to show their character, as it would not be possible to present them in detail in a short chapter.

One of the first impressions made upon the mind of the student of North American ethnology is the resemblance in a broad and general sense of the features, customs, arts, and archaeological remains of the west coast to those of the islands in and countries bordering on the Pacific ocean, while on the other hand there is no such resemblance between them and those of the Atlantic slope. In other words, the types when classified in the broadest sense appear to ar-

range themselves in two general divisions—those belonging to the Pacific slope and those confined to the Atlantic slope. Although this classification was not made in express words until it was done by the author of this work (see Report on Mound Explorations, in the 12th Annual Report of the Bureau of American Ethnology, 1894), yet there is a very evident tendency in the works relating to the west coast ethnology toward such a classification, and a disposition to separate and mark out what may be termed the Pacific types. "If nations of the eastern shores of the Atlantic," says Prof. Dall, "were responsible [for the introduction of the above mentioned types], we should expect the Atlantic shores of America to show the results of the influence most clearly. This is not the case, but the very reverse of the case."

As indicative of this difference a few of the types may be noticed, as follows: The singular form of carving, representing a figure with the tongue hanging out, and usually communicating with a frog, otter, bird, snake, or fish, observed on the north-west coast from Oregon to Prince William sound and also in Mexico and Nicaragua. We may add that this feature is found in numerous instances in statues and bas-reliefs from Mexico to the Isthmus, also in the codices of Mexico and Central America, but seldom if ever appears in the antiquities of the Atlantic division.

The prominent Tlaloc nose of Mexican and Central American figures, of which the supposed elephant proboscis is but one form and the bird bill (thunder bird) of the north-west coast another, both of which are but different methods of representing the same idea, is a characteristic of the Pacific side.

The method of superimposing, in totem posts and statues, one figure upon another, usually combining human and animal, is found, except in California, from Alaska to the isthmus, and is a true Pacific type, being almost unknown in the Atlantic division.

The angular designs on the pottery and basketry are another marked feature of the west coast division. And thus we might, if this were the proper place to enter into details, go on enumerating marked distinctions between these two primary ethnological sections. As evidence of the fact stated, let any one compare the figures in Ensign Albert P. Niblack's excellent work on "The Coast Indians of Southern Alaska and Northern British Columbia," with the Mexican and Central American monuments and figures, and then compare them with the types of the Atlantic slope. While the first comparison shows such a marked resemblance as to lead to the inference that they were derived from some common source, or the result of some common influence, the second comparison shows no such similarity. The spread of types of custom and art were governed in part by several influences, as ethnic lines, migrations, contact and physical conditions. Where we find those of a character which do not depend upon physical conditions, but upon superstitious notions, following a given line without spreading out indefinitely, we may assume, until satisfactory evidence of another cause is given, that they mark a line of migration and are largely ethnic. It is in this light we are inclined to view the coast-line extension of the types peculiar to the Pacific slope.

Dr. Brinton ("American Race"), notwithstanding his view in regard to the origin and homogeneity of

the American race, arranges his linguistic groups geographically by the same dividing lines as those we here indicate as separating the primary archaeological divisions. His "North Atlantic Group," omitting the Eskimos, corresponds with our Atlantic division, and his "North Pacific" and "Central" groups combined with our Pacific division. This arrangement, as he admits, is not one of convenience only, as he attaches certain ethnographic importance to it. "There is," he continues, "a distinct resemblance between the two Atlantic groups, and an equally distinct contrast between them and the Pacific groups, extending to temperament, culture and physical traits. Each of the groups has mingled extensively within its own limits and but slightly outside of them." Elsewhere he remarks that "a few of the eastern stocks, the Athapascan and the Shoshonian, have sent out colonies who have settled on the banks of the Pacific; but as a rule the tribes of the western coast are not connected with any east of the mountains. What is more singular, though they differ surprisingly among themselves in language, they have marked anthropological similarities, physical and psychical. Virchow has emphasized the fact that the skulls from the northern point of Vancouver Island reveal an unmistakable analogy to those of southern California. . . . There are many other physical similarities which mark the Pacific Indians and contrast them with those east of the mountains." In his "Races and Peoples" this division between the eastern and western slopes is expressed still more pointedly: "All the higher civilizations are contained in the Pacific group, the Mexican really belonging to it by derivation and original loca-

tion. Between the members of the Pacific and Atlantic groups there was very little communication at any period, the high sierras walling them apart."

As the arctic section, especially those portions occupied by the Eskimo stock, present marked peculiarities, the whole of North America may be considered in three divisions which may, for convenience, be termed:

I. The Arctic Division.
II. The Atlantic Division.
III. The Pacific Division.

CHAPTER III.

METHODS OF STUDY.

Although the method of studying American archaeology has been touched upon to some extent in the preceding chapters, it may be well to add something more on this subject before entering upon a discussion of the antiquities of the divisions outlined above.

Most of the writers dealing generally with this subject begin their works with the primitive, or supposed primitive inhabitants—paleolithic men, men of the mastodon age, cave men, etc. It is probably the correct and scientific method in an extended treatise on American archaeology to begin with the earliest traces of man on the continent, thence following him down the ages, marking his advance in culture, but it is very questionable whether this is the best method of studying North American archaeology. It is the belief of the author of this work that the most satisfactory plan is to begin with the known and work back toward the unknown; to begin with the aborigines and monuments and trace them back step by step into the past.

The evidence so far ascertained leads to the conclusion that, as a general rule, the monuments of the various sections are attributable as a whole, or in part, to the ancestors of the people found inhabiting those sections at the incoming of the whites. This has been found true in regard to Mexico and Central America,

and is now generally accepted as true in regard to the regions of the Mound-builders and Cliff-dwellers. It is therefore advisable to proceed upon this supposition in regard to other sections until evidence incompatible with this conclusion has been brought to light. Prehistoric migrations, of which frequent mention will be made herein, have undoubtedly taken place, for, without this, population could not have spread over the continent, but this was a slow process which required ages for its accomplishment. Moreover, as numbers increased and cultivation of the soil began, the tribes necessarily became more and more sedentary in habits. This had progressed to that extent when Europeans made their appearance that most of the groups had long been permanent residents of the sections they were found inhabiting; in fact, as will hereafter be seen, there are good reasons for believing that most of the larger stocks had developed into tribes substantially in the respective regions they were found occupying. As this development must have required a long time, the presumption is justified, except where shown by the evidence furnished by the monuments or language to be incorrect, that these remains are attributable in a general sense to the ancestors of the inhabitants of the respective sections. That there was still more or less shifting of tribes and to some extent of stocks through the fortunes of war and here and there the breaking away of one or more tribes from the parent hive, is no doubt true, but that there was a greater degree of permanency than has generally been supposed, is also true, a fact which is becoming more and more evident through the investigations of late years. Therefore the natives as well

as the monuments must be studied, and the language, physical traits, customs, traditions, mythology and folk-lore of the natives are important factors which the student must bring to his aid.

Another fact which should be borne in mind by the student is the danger of basing conclusions on abnormal objects, or on one or two unusual types. Take for example the supposed elephant mound of Wisconsin which has played such an important role in most of the works relating to the mound-builders of the Mississippi valley, but is now generally conceded to be the effigy of a bear, the snout, the elephantine feature, resulting from drifting sand. Stones bearing inscriptions in Hebrew or other Old World characters have at last been banished from the list of prehistoric relics. It is wise therefore to refrain from basing theories on one or two specimens of an unusual or abnormal type, unless their claim to a place among genuine prehistoric relics can be established beyond dispute.

It is unfortunate that many of the important articles found in the best museums of our country are without a history that will justify their acceptance, without doubt, as genuine antiquities. It is safe therefore to base important conclusions only on monuments in reference to which there is no doubt, and on articles whose history, as regards the finding, is fully known, except where the type is well established from genuine antiquities. One of the best recent works on ancient America is marred to some extent by want of this precaution. Mounds and ancient works are described and figured which do not and never did exist;

and articles are represented which are modern productions.

The method of study to be pursued depends very largely upon the extent to which it is to be carried and the lines to be followed. For the general reader and the individual who desires to obtain only a general knowledge of the subject, and for the student who studies the subject merely as a collateral branch, the writer trusts that this work will suffice. But for him who wishes to enter more into details, it can only be what it purports to be, an *introduction* to the study. For the latter class, a general knowledge of what has been accomplished is necessary in order to avoid wasting time and energy in going over beaten paths.

The student devoting attention to local archaeology, that is, to the monuments and remains of a particular district, will, of course, acquaint himself first with the investigations which have been previously made in that district. However, this does not end with merely ascertaining what monuments have been discovered and located, which of them have been explored and what relics and remains have been obtained, but includes a careful study of the types and their relation to the types of the immediately surrounding regions, as archaeology, as a science, if it can be so called, is based largely on analogy. In this way he determines what are the prevailing types of the district and what are peculiar to it if there be any; but this investigation in reference to a limited district or to particular classes of antiquities must descend to more minute details than will be necessary in making a general survey of the antiquities of a more extended area. It may, perhaps, be truly said that we are just en-

tering upon this stage of archaeologic progress, and yet upon the result of such investigations must depend the answers to some of the important problems relating to the prehistoric times of the various sections of our continent. Among the most abundant and generally distributed classes of prehistoric artefacts are arrow- and spear-points; and though the varieties seemingly baffle attempts at classification, it will probably be possible to determine all the types of a limited district and thus obtain one means of comparison with the archaeology of surrounding areas. Celts will afford another means of comparison, and so on through the entire list both of monuments and relics.

However, in order to study the monuments properly and their bearing on the questions relating to the prehistoric times of the given locality, mapping is an important step. A local worker should have a map of his district with the localities of the antiquities marked thereon with symbols indicating the types. Maps and diagrams of the groups of works are of course necessary to intelligent study. In other words, the geographical relations of ancient works in a district as well as the relations of the individual works to each other in the groups are important. Although the mounds in the groups of the mound area of the United States appear to be usually placed without respect to order or plan, yet in the southern states they are so arranged in many of the groups as to leave a central, open space or plaza, while in Wisconsin the arrangement in lines is an archaeological characteristic of the region. The geographical distribution of types forms the chief aid in outlining culture areas.

It is important in studying the types of the monuments and of the artefacts to determine the essential features of each type. It is often true, especially in the case of imitative objects, that the type is conventionalized to such an extent as to lose apparently every feature of the object of which it was intended to be a representative; yet the careful student, by tracing the variations and eliminations, will usually be able to determine the essential features and reach a correct conclusion. Without this study unessential characteristics may be given an undue prominence. There appears to have been a strong desire on the part of the aboriginal artists to introduce the eye and other face features into the Central American hieroglyphics, yet in many of these they are non-essentials, being simply ornamental; and the same thing is true in regard to many other antiquities. Nevertheless, these unessential features as to the type are important in comparisons, as they assist in ascertaining affinities and derivation where the type is widely distributed. The olla or globular bowl has been and is yet a common type of pottery vessel among the Pueblo Indians of New Mexico and Arizona, yet the Indians can, in most cases, readily decide from what Pueblo a particular vessel came by the ornamentation or other features unessential to the type.

The student investigating the archaeology of a given district should, as above indicated, make himself acquainted, so far as the data will permit, with the history, customs, beliefs, traditions, etc., of the tribes which have inhabited that district. Of course it does not necessarily follow because it is known that the ancestors of the people found inhabiting a certain ex-

tensive section, as Central America, Mexico, the Pueblo region or the mound area, were the authors of a large portion of the monuments of that section, that the ancestors of the people found in more restricted localities were the authors of the monuments of those particular localities. There are unquestionably some monuments in southern Arizona and northern Mexico which can not be attributed to the ancestors of the tribes inhabiting or known to have inhabited the particular localities where these ruins are found. The same thing is true also of certain ancient works in the mound section of the United States. Although the works as a whole are attributable to the ancestors of the Indians of the section, some tribes who were mound builders may have become extinct through wars or epidemics, others may have been forced to shift position, and still other tribes may never have adopted the custom of building mounds, yet the proposition in its general application remains true. One object, therefore, of the local worker should be to determine, if possible, what tribes or people were the authors of the works of the district he is studying, whether those known to have inhabited the district, or others removed in prehistoric times. The first step in this investigation is to learn the customs, arts, etc., of the people who formerly inhabited that district, as he may thus be enabled to determine the probability that they were the authors, or to eliminate them from the investigation. The *a priori* presumption is that the local natives were the builders. Every elimination of a factor from the discussion of a problem is one step toward the true solution.

In the study of types the method must, of necessity,

be very largely geographical with reference to varieties, if the object in view be to ascertain the distribution of the different varieties. If the object be simply to trace the development of the type, the geographical distribution is of less importance. Mr. A. E. Douglass, of New York, who has a large private collection, suggests in regard to museum collections a double arrangement for these purposes: First, an arrangement of specimens according to geographical distribution; and second by varieties. As the study of types necessitates the examination of specimens, this plan, where practical, would undoubtedly be advantageous. One difficulty in these lines, which has not yet been overcome, is the want of a uniform and acceptable nomenclature; but nomenclature seems impossible without classification, which has not been accomplished except in regard to limited districts. This is a desideratum to which the attention of curators of museums is now being directed, and it is to be hoped, notwithstanding the difficulties in the way, that they will find some means of classifying collections sufficiently to form a basis for names of types.

In studying the monuments it will be found, as yet, advantageous to limit attempts at grouping or classificatory arrangements to districts or sections. Comparison can then be made with the works of other sections or districts, group with group, or class with class. By this type generalization or aggregation the contrasts or similarities are not only more apparent than by single comparisons, but are of much more importance. By such comparison of the works of the mound-builders with those of the Pueblo region or Central America, the contrast is, so to speak, intensi-

fied. Within the section or district some grouping, even though it be arbitrary, is absolutely necessary to progress, and without it discussion is impossible and general description of little value. In other words, the student can make but little progress in archaeology until he advances to what may be termed the generic stage. Mr. Holmes has adopted a most excellent method, both in his studies of the monuments and of the minor vestiges of art. He learns by a comparison of specimens or of individual monuments the essential characteristics of the different types under investigation; then by means of outline figures or sketches brings the types pertaining to the same general class in their simplest form into comparison. See, for example, his comparison of types of pottery vessels of a certain class shown in our Fig. 37, and his comparison of temple plans in our Fig. 96. Although the idea is not new, his application of it to the antiquities of North America which he has examined is clear, and serves to illustrate a plan which may well be followed.

Study may be in the field, in the museum or in the books. In the first case there are numerous practical questions which can be answered only by experience; the student must therefore learn by practice or by reference to the experienced field worker. The Bureau of American Ethnology receives many letters inquiring as to the best method of exploring (opening) and investigating mounds, etc. Although the general direction, to note every thing so carefully as the exploration proceeds that a complete restoration in every particular could be made from these notes, would perhaps

answer the inquiry, the following suggestions are added for the benefit of the young beginner:

If the mound to be explored be one of a group, the first step is to make a full and complete description of the group, with diagram as heretofore suggested, noting carefully the topography of the area covered by the group, and of the immediately surrounding country. The plan should show the correct positions of the mounds, and their form and size (diameter and height) should be noted. In addition to the measurement of the mound to be explored, a horizontal section showing an outline of the base as seen from the summit, and a vertical section showing the contour of the longest diameter, should be drawn on paper, and of sufficient size to note spaces thereon, of a foot measured on the ground. The north and south points should be indicated on the horizontal section. These plans are for the purpose of inserting marks indicating the positions, horizontally and vertically, of the articles found as the exploration proceeds. These, with the notes naming the articles by corresponding numbers and giving the measurement as to depth and side, will be sufficient to locate the article in the mound, should its exact position ever become a question of any importance. Such a question occasionally becomes important when the article is found to indicate contact with Europeans, or is abnormal.

In order to note the stratification it is best to dig a trench from side to side through the highest point, or center, and where the mound is of considerable size it will be well to run another at right angles to this. These should commence and end at the extreme outer margins of the mound and be carried down to the

natural soil or subsoil as the case may be. When a skeleton or relic is found it should not be removed until it is well exposed and its character and position noted down. If a vault, tomb, wall or any thing of large size is encountered, the trench should be carried around this until it is fully exposed before being disturbed. When the trenches are completed, the remaining portions of the mound can be removed, the same care being taken. Where the mound is of large size, sinking shafts and tunneling may have to be resorted to. Care must be taken to mark all articles found, with numbers corresponding with those in the notes and on the sections. Of course the character and thickness of the strata and every other particular deemed worthy of remembrance should be noted down. Photography will of course be advantageous where clear and distinct pictures can be obtained, but will not supply the place of sketches. As it would require too much space to notice all the variations from these suggestions and add additional ones necessary to meet the numerous peculiarities the explorer may encounter, we can only repeat what is stated above: Note every particular with such care that it will be possible from the description to completely restore the mound in every particular.

As the author is familiar by personal investigation with the antiquities of the mound region alone, his suggestions in regard to those of other sections must be drawn from the works of other explorers. Profitable suggestions in reference to the method of studying the ruins of Central America and Mexico may be drawn from Mr. Holmes' account of the celebrated Palenque group given in his "Archaeological Studies

among the Ancient Cities of Mexico." He starts out by giving a sketch map of the locality. Then follow in order a "Panoramic View" of the group; the "Orientation and Assemblage," which results in showing that the placement of the buildings would seem to be due to the natural features of the ground rather than to a regard for the points of the compass; "Materials and Masonry"; "Construction"; "Substructures," or pyramidal basements; "Superstructures," or buildings; under the latter he outlines the ground plans of the types, following with the profiles of construction or elevation accompanied by outlines of vertical sections, illustrating the mode of construction. This is followed with descriptions of the roofing, of the types of doorways, of pillars, stairways and other essential features of the buildings, the ornamentation being considered last.

In his description of Monte Alban and Mitla, in addition to the description of the ruins and mode of construction, he goes back to the quarry in order to study the method of preparing the material from the initial stroke until the blocks of stone are ready for removal to the building site, and to learn what manner of tools were employed and how used. This might be followed up from the work of others, as that of explorers of the Bureau of American Ethnology and of the Hemenway Expedition among the ruins of New Mexico and Arizona, but what has been mentioned will suffice to indicate the method these field workers have followed. It is something of an art to grasp readily the chief idea or plan of a group of ruins. When this is caught, the lines and parts

are usually easily traced, though hidden from view until uncovered.

The study in the museum, that is of articles in collections, has been alluded to incidentally. The study of the literature, where not in aid of the study of the monuments and remains, is chiefly for the purpose of investigating certain problems. In this case the scope of inquiry is widened and the data furnished by the monuments and remains constitute but one of the factors; language, physical traits, customs, traditions, mythology and folk-lore must all be brought into the investigation. This involves also an examination of the early histories, the accounts of navigators and explorers and of more recent discussions on the same topics. The student must bear in mind the fact that archaeology is based on particulars, on innumerable fragments, and that conclusions and theories to be correct, must, so to speak, be the figures formed when the fragments are rightly placed. This brief and far from complete outline of the method of study will, with the present work, furnish some aid to the student who wishes to devote attention to North American archaeology, but the critical investigator is expected to open up new lines and bring to bear new arguments on the questions which arise.

CHAPTER IV.

ARCTIC DIVISION.

As the archaeological data of this division are few, and their direct connection with the Eskimo and allied tribes is not questioned, the division is purely an ethnological one. However as the people at their entrance into the domain of history were in the stone age, the implements, utensils and other artefacts in use among them afford a means of comparison which can not wisely be overlooked even in this brief survey. Moreover this area furnishes the best field on the continent for the study of the culture of a primitive people as indicated by their arts. Stone and bone implements found in the graves, mounds and refuse heaps of other sections are often serious puzzles to the archaeologist, because their use was discontinued before the historical era and is not easily determined. But in the Eskimo area few have been discovered of which the use is unknown, almost every form having been continued in use until visited by European navigators. The knowledge thus obtained furnishes a key by which many an archaeological riddle may be solved.

Monuments or Local Antiquities.—These consist almost wholly of shell or refuse heaps, the remains of old iglus or Eskimo houses which were constructed in part of stone, and an occasional pile of stones heaped over a grave to protect it from wild beasts.

No true mounds, inclosures or fortifications of a permanent character, have been discovered in the entire area. This statement will also probably apply to a considerable extent of country lying south of the northern Eskimo belt, as we are informed by Rev. A. G. Morice, who has resided for many years among the north-western Athapascans (or Dené), that "throughout the whole extent of their territory, no mounds, inclosures, fortifications of a permanent character, or any earthen-works suggesting human agency are to be found."

Numerous shell-heaps have been discovered in the Aleutian Islands. Such of these as have been excavated are found to consist of two or three distinct strata, indicating, it is supposed, successive periods of occupancy. Prof. W. H. Dall describes the typical form as consisting of the following layers: First, or lowest stratum, composed almost exclusively of the broken tests or spines of *Echinus*, a few shells of different species of edible mollusks being intermixed; the next layer above, composed chiefly of fish bones and shells, with an occasional bird bone; above this was a layer characterized by numerous mammalian bones, of marine species, intermixed with bones of sea birds; this was covered by modern deposits and vegetable mold.

The following articles found in this refuse heap furnish some indications, Prof. Dall thinks, of the advance in culture during the time it was being formed, though this has been questioned. In the lower stratum a small hammer stone was discovered which had an indentation on each side for the finger and thumb, and bruises on the ends, indicative of use, probably

for breaking Echinus tests. In the second were rude net-sinkers, stone knives, and spear-heads both of stone and bone, the latter distinctly barbed (Fig. 1).

Fig. 1. Bone Spear-head, Eskimo.

These appeared in still greater abundance and varied forms in the mammalian stratum, from which were also obtained stone, bone, and horn skin-dressers, bone awls, stone adzes and lamps; also carved articles, such as masks, and a single face-form carved on bone. One of the lamps is shown in Fig. 2. Bone and stone

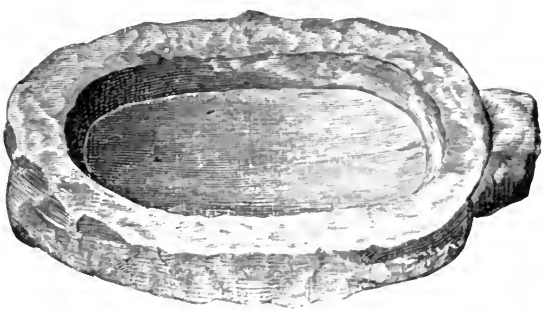

Fig. 2. Stone lamp, Eskimo.

labrets were found in the upper layer of one of these shell-heaps and also in a cave deposit of corresponding age. One of the labrets is shown in Fig. 3. Prof. Dall, to whom we are indebted for the foregoing description of Aleutian shell heaps, discovered also in the same region the marks and remains of ancient villages. The method of building among the ancient

inhabitants, who are presumed to have been Aleuts, was to excavate slightly, build a wall of flat stones or of the bones of the larger whales, and bank this on the outside with turf and stones. The roof appears to have been formed usually of whales' ribs, covered with wisps of grass tied together and laid on the rafters, then turfed over.

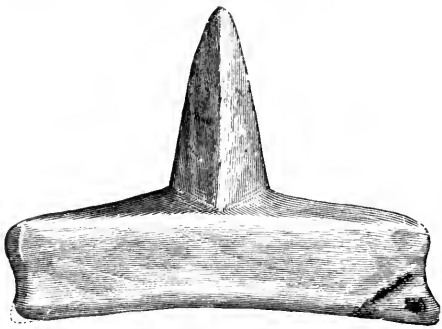

Fig. 3. Labret, Eskimo.

The remains of ancient stone houses are found scattered over the greater part of Arctic America, especially the eastern portion, even in sections no longer inhabited by Eskimo, as the Parry Archipelago and the northern part of East Greenland. These are appropriated by the Eskimo of the present day for temporary dwellings when they stop in the region where they are found. A figure of the remaining foundation of one of these ancient structures is given in Fig. 4, from Kumlien. The purpose of the long kayak-like building figured in connection with the stone house is not known. Dr. Boas says he found a similar one twenty feet long, scarcely one foot high, consisting of two rows of stones, at Pangnirtung, Cumberland Sound, but nobody could explain its use.

The remains of a number of these ancient stone houses, or iglus, have been found in the American Archipelago and about Cumberland Sound. Those in good condition have a long stone entrance, sometimes

from fifteen to twenty feet long. This is made by cutting an excavation into the slope of a hill. Its walls are covered with large slabs of stone, about two

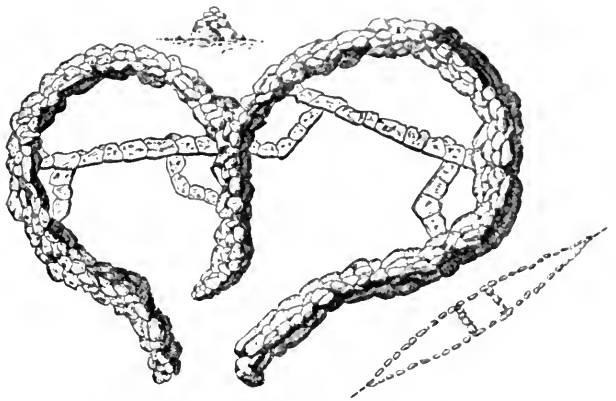

Fig. 4. Remains of an ancient Eskimo house.

and a half feet high and three feet wide, the space between the stone and the sides of the excavation being afterward filled with the earth. The floor of the passage slopes upward toward the hut. The last four feet of the entrance are covered with a very large slab, and are a little higher than the other parts of the roof of the passageway. The slab is at the same height as the benches of the dwelling room, which is also dug out, the walls being formed of stones or whale ribs. These houses are supposed to have been covered in the same way as those already described.

Dr. Boas states that he has found at Ukiadliving, among other remains, some very remarkable "store-houses." "These structures," he says, "consist of heavy granite pillars, on the top of which flat slabs of stone are piled to a height of nine or ten feet. In

winter, blubber and meat are put away upon these pillars, which are sufficiently high to keep them from the dogs; skin boats were also placed on them." This was doubtless the object in view in building these rude structures, but why the covering should be so thick and heavy is not apparent if this were the only object.

Implements, Ornaments, etc.

As all the monuments and minor vestiges of art of this division are attributable, as already stated, to the Eskimo, the earliest forms that are known differing but slightly from those of modern times, it is only necessary here to notice a few of the more important types for the purpose of comparison.

As agriculture is impracticable in the rigorous climate of the Eskimo region, and the means of subsistence limited to animal food, the variety of implements is not large. They consist chiefly of such as are used in killing and capturing the food animals—of which the larger portion are marine mammals; the implements and vessels used in preparing and cooking food, and in preparing the skins for the various uses to which they are applied. The simplicity in the Eskimo manner of life, the necessary uniformity in their method of procuring subsistence, and the manner of clothing themselves, have conventionalized to a great extent their implements and arts. As the struggle for existence has been a difficult one with them, and the clothes and dwellings necessary to protect them against the cold are ill adapted to the use of ornaments, the variety of such articles is quite limited.

The articles of stone and bone, which are the only ones requiring notice here, consist chiefly of arrow, spear and harpoon heads, skin scrapers, *ulus* or women's knives, adzes, lamps, cooking pots or kettles, flakers and labrets.

The chipped flint heads of arrows and spears are usually well made, finely finished and symmetrically formed, differing in size and slightly in form according to the particular purpose for which they were intended. Some of the older specimens are somewhat ruder, but would undoubtedly be classed as neolithic.

One of the most useful and necessary implements belonging to an Eskimo household was the *Ulu* or Woman's knife, which, with them, performed all that is done in enlightened communities with the various cutting implements of the butcher-shop and the household kitchen. The simplest form was a flake of flint with a cutting edge, but with the Eskimo they were usually made in a particular form, and, with the handle, resembled the ordinary kitchen chopping-knife, which, in fact, has to a large extent replaced the stone implement. The blade was of hornstone, chert, or flint material and slate, especially the latter. (Fig. 5.) Another indispensable household article was the lamp, which furnished both heat and light. These were usually of soapstone, though a few of other stone have been discovered. The

Fig. 5. Ulu, or woman's knife, Eskimo.

form of this vessel was not so strictly conventionalized as that of the kettle or cooking pot, though generally dish-shaped and shallow. (Fig. 2.) A semicircular form was also common, the length varying from six inches to nearly three feet.

Before the introduction of European vessels the cooking was usually done in soapstone pots or kettles

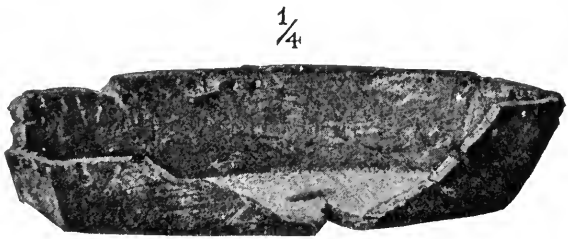

Fig. 6. Soapstone pot, Eskimo.

by placing them over the lamps or putting heated stones in the water. They were comparatively small, varying in capacity from a pint to a gallon, rectangular in outline with the sides perpendicular or slightly flaring. (Fig. 6.)

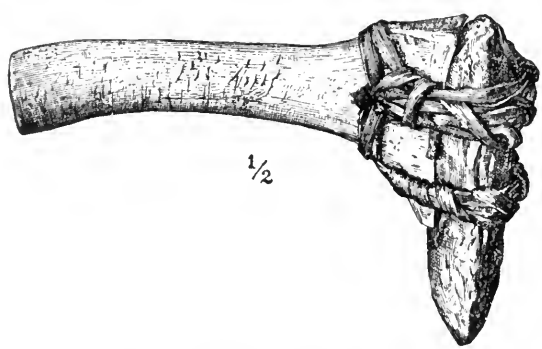

Fig. 7. Hafted jade adze, Eskimo.

Even at the present day, according to Mr. Murdoch, the Eskimo of Point Barrow use no tool for shaping large pieces of woodwork except a short-handled adze, hafted in the same manner as the old stone tools which were employed before the introduction of iron. (Fig. 7.) The skin scraper usually consisted of a blunt stone blade mounted in a short thick haft of wood or ivory, fitting exactly to the inside of the hand and having holes or depressions to receive the fingers and thumb. (Fig. 8.)

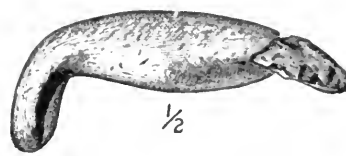

Fig. 8. Skin scraper, Eskimo.

The art of making flint arrow and spear heads has not been entirely lost by the Eskimo. Flint pebbles are splintered by percussion into fragments of suitable size, and the sharp-edged spalls are flaked into shape with an implement consisting of a short straight rod of flint or bone mounted in a short curved haft grooved for its reception. (Fig. 9.)

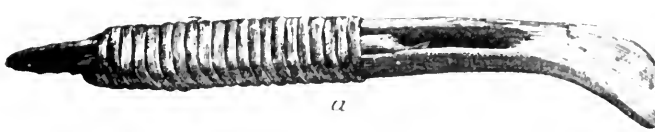

Fig. 9 Flint flaker, Eskimo.

Culture-home of the Eskimo.

The origin of the Eskimo or Innuit is a question which has been much discussed, but as yet remains undecided. The generally-accepted theory has been that they migrated from north-eastern Asia by way of Behring Strait. Recently, however, several writers, among whom are two or three who have made a

special study of them, have reached the conclusion that they were originally an inland people of North America, and that their migrations were toward the north and west. This conclusion is based to a considerable extent upon the evidence, now generally accepted, that the Asiatic Eskimo (the *Yuit*), dwelling around East Cape and to the south of it, migrated in late prehistoric times from America, and that the Aleuts inhabiting the islands moved in the same direction.

As any opinion which may be advanced on this question is at best but conjecture, the subject does not come properly within the scope of the present work. There is, however, a closely cognate problem which offers greater probability of final solution, and which is of importance in the study of the prehistoric times of our continent. As well stated by Dr. Rink, who has made this arctic people well nigh a life study, "In regard to the cradle of the Eskimo race, we have before all to discern between their original home and the country in which they developed their present culture, which is characterized by their capability of procuring means of subsistence in arctic regions, where no other nation can live." He then points out some "necessary conditions for guessing the site" of this culture-home.

Alluding to the vast shore line which was, so far as known, occupied by the Eskimo as its only inhabitants before their modern contact with the European race, he divides them into Eastern and Western, separated by Cape Bathurst. He assumes as a basis, which is admitted to be correct by those who differ from him, first, that only one such culture-home can have existed,

and second, that even this one must have been of relatively small extent. The extraordinary uniformity of the utensils, instruments and weapons common to all the widely-spread tribes or groups, and the comparatively slight variation in language, is suggestive of a common origin. He then shows from the vocabularies of the different sections the identity of the names given by the Eastern and Western groups to the animals used as food, boats, vessels, implements, etc., giving a list which excludes the possibility of accidental likeness. To this is added the similarity in form and use of the vessels and implements referred to.

The direction of the migration is assumed from the following facts:

The gradual completion of the kayak with its implements, and the art of using them. The gradual change of several customs in proceeding from the south and west to the north and east, namely, the use of labrets or lip ornaments ceasing at the MacKenzie River, the use of masks at festivals ceasing in Baffin's Land, and the women's hair dressing gradually changing between Point Barrow and Baffin's Bay, and the change in the houses in certain particulars.

These indicate that the movement was from the extreme west, or Alaska, toward the east, and this Dr. Rink believes is the true solution of the problem.

On the other hand, Mr. Murdoch and Dr. Boas, who have personally studied the race on opposite sides of the continent, believe the culture-home was in the interior about the south end of Hudson's Bay, whence they separated into three principal divisions,

one going north-east, another north, and the other north-west. This opinion is based chiefly on the primitive art of the central region, the form of the sinew bow, and the westward movement above referred to. It would seem difficult, however, to account upon this theory for the adoption of the kayak and its accompaniments, and the application of the same terms throughout the extended region where they are found, often in widely separated groups, between which intercourse is exceedingly rare. The settlement of this question, which appears possible with the accumulation of data, is important to the study of ethnology. If the latter theory be correct, it will have a material bearing on the theories in regard to the course of migration of the Indian population south and west of this assumed inland culture-home, for it is not probable that any people who have acquired their habits in an interior area, and comparatively moderate climate, would leave it, except under strong pressure, to take up their abode in such inhospitable regions as they now occupy.

All the implements and works of the Eskimo appear to be adapted to their peculiar conditions and their only means of subsistence and preservation of life. They are very largely those of a littoral and arctic people, developed through the necessity of procuring, to a large extent, subsistence from the sea and defending themselves from the cold without material derived from the forest. Many of the articles, it is true, are adapted to savage life in any section, whether in the interior or on the coast, whether in an arctic or temperate climate, but on the other hand many others are suited only to the conditions under which they

live. Hence it must be assumed, unless valid reasons for a different conclusion are shown, that those peculiarly adapted to the situation were developed in the area where they are found, or one similar in its conditions.

Mr. Murdoch's suggestion that the use of labrets is a habit which has worked its way along the western coast of America from the south is worthy of consideration, though it does not appear to strengthen his theory, but tends rather to support the opposite conclusion. Nevertheless it is not without support, and opens up a new line for thought and investigation, and furnishes an additional pointer to a particular region of the western coast which possibly may have played an important part in the peopling of the continent.

CHAPTER V.

ATLANTIC DIVISION.

This division includes geographically, as heretofore indicated, all that part of North America east of the Rocky Mountains north of the Rio Grande and Gulf of Mexico, except that portion embraced in the Arctic division and except also the area occupied by the northern Athapascan or Dené tribes.

At the time Europeans began to plant colonies in this region it was occupied by Indians belonging chiefly to some four or five linguistic stocks. The northern portion from Labrador to the Rocky Mountains, the central area east of the Mississippi from the lakes south to Tennessee, and a strip along the Atlantic coast from the Gulf of St. Lawrence to Pamlico Sound, was occupied by the great Algonquian stock. Gathered about lakes Erie and Ontario, both north and south, stretching down both sides of the St. Lawrence to Quebec, and extending over New York and most of Eastern Pennsylvania, was the Iroquoian family, belonging to which were outlying groups along the south-eastern border of Virginia, and about the headwaters of the Tennessee and Savannah rivers. The Muskhogean family occupied most of the area embraced in the southern states east of the Mississippi. Extending westward from the Mississippi river—from its headwaters to the Arkansas—across the broad plains of the west, and occupying most of the drainage area

of the Missouri and Arkansas rivers, was the Siouan stock, the Bedouin of North America. Belonging to this group were some scattered fragments, one along the piedmont region of Virginia and the Carolinas, and one of small size on the southern coast of Mississippi and another in Arkansas. Besides these there were the Caddoan stock, chiefly in western Louisiana and eastern Texas; the Timuquanan occupying the Florida peninsula, and some, few in numbers, covering small areas chiefly about the mouth of the Mississippi.

The archaeological conditions we encounter in this area are so widely distinct from those of the Arctic division as to require but little thought or study to mark the differences. It is true we find here flint arrow- and lance-heads in abundance, some of them bearing a close resemblance to and scarcely distinguishable from those of the Eskimo. Chipped stones of a certain form, which are supposed to be skin-scrapers or skinning implements, are also found in great numbers, and though many of them may be compared with the flint points of the Eskimo scrapers, yet the manner in which they were hafted, or whether hafted at all, is in most instances only a surmise. It is noticeable that of the fifty-six American scrapers figured in Prof. O. T. Mason's "Aboriginal Skin Dressing" (Rept. Nat. Museum, 1888–9), all except five are Eskimo, and the five are adze shaped and have iron or steel points. The elbow-shaped handle may be a survival from the stone age, nevertheless it is possible that the advent of iron may have worked some change in form. Local monuments, as we have seen, except, refuse heaps, foundations of old iglus

and some ancient graves, are unknown to the arctic section. On the contrary, in the area we are now entering upon, the Mississippi valley, from the headwaters in Minnesota to the Red River of Louisiana, and from the sources of the Ohio to the border of the western plains, is dotted over with earthen mounds, clustered into groups or scattered singly; here and there hills and bluffs are crowned with defensive works, indicating tribal warfare; throughout southern Illinois, Kentucky and Tennessee the rude stone sepulchers of the ancient inhabitants are found in great numbers; and other evidences of prehistoric occupancy abound. Thus it will be seen that the difference archaeologically between the two divisions is a wide one.

Monuments, or local antiquities.

The antiquities of this class found in this division consist chiefly of earthworks, stoneworks, graves, cave deposits and mines and quarries, and might be classed under these heads but for the fact that some belong partly to one class and partly to another; then there are certain other local antiquities which can not possibly be classed under either of these headings. If it were possible to decide positively as to the use of each type, this would afford one means of classification, but unfortunately here our knowledge is sadly at fault. However, as some arrangement for the convenience of reference is necessary, they will be grouped here by leading types under the following heads: Mounds, Refuse Heaps, Inclosures, Hut-rings, Excavations, Graves and Cemeteries, Garden Beds, Hearths or Camp Sites, and Ancient Trails. Besides

these there are Mines and Quarries, Cave Deposits and Petroglyphs. That the particular sense in which some of these terms are used in this work may be clearly understood, the following explanation is given:

Mounds.

The tumuli or true mounds, to which the term will be limited in this work, are the most common and most numerous of the fixed antiquities, being found in the valley of the Red River of the North from its source to its mouth, and here and there an isolated one in Canada; throughout the Mississippi valley and the region south of the great lakes to the gulf they constitute the larger portion of the numerous groups, it being exceedingly rare to find a group in which they do not occur. Although the forms are various, they may be classed as conical tumuli, elongate or wall mounds, pyramidal mounds, and effigy mounds.

The conical tumuli are artificial hillocks cast up with some special object in view, and not mere accumulations of debris. The form is usually that of a low, broad, round-topped cone, but as at present found is, in consequence of wear and tear by the plow and the elements, often that of an irregular heap, distinguished from the refuse heap only by internal evidence. They vary in size from a scarcely perceptible swell in the ground to elevations of eighty or ninety feet, and from six or eight to three hundred feet in diameter. The outline is generally approximately circular where they retain their original shape, though many are oblong or oval and some pear-shaped. Most of the Burial Mounds are of this type.

The works to which the name "Elongate or Wall

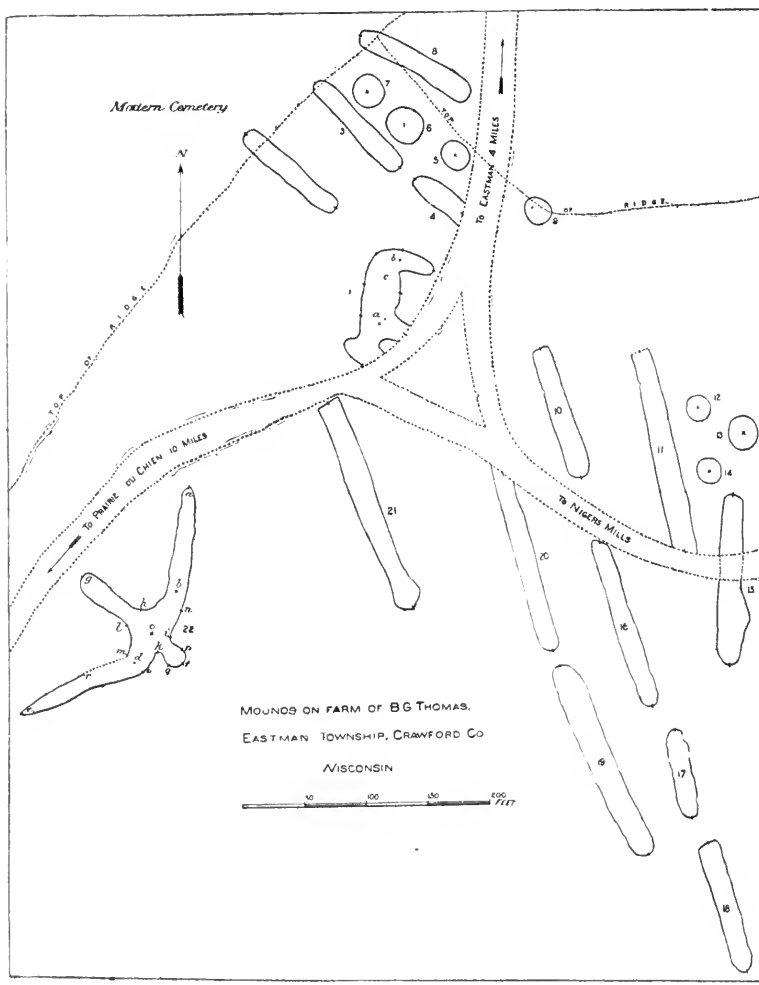

Fig. 10. Plat of mound group, Wisconsin.

Mounds" is applied are certain linear earthen structures which seem to be confined almost exclusively to the effigy-mound region mentioned below. The only external characteristic which distinguishes them from the oblong mound of the conical type is their wall-like appearance; in truth the longer ones may be properly called walls, if we judge by the form alone. This characteristic is apparent even when the length is not great as compared with the width. Usually the length is from one hundred and fifty to three hundred feet, though some are found as short as fifty while others extend to nine hundred; the width varies from twenty to forty feet, and the height seldom exceeds four feet. They appear to be simple lines of earth cast up from the adjoining surface, but with what object in view is unknown; however, they are seldom used as burial-places, and even where so used it is apparently an after-thought. (Fig. 10.)

The typical form of the Pyramidal Mounds is the truncated, quadrangular pyramid; some, however, are circular or oval and a few pentangular, but are distinguished from the conical type chiefly by the flat top or truncated form. In some instances, as in the Marietta group, Ohio, they are so reduced in height, compared with extent, as to assume the appearance of earthen platforms; others have terraces extending outward from one or two sides, and others a ramp or roadway leading up to the level surface. In consequence of wearing by the plow and elements the sharp outlines have, in many instances, been obliterated to such an extent as to render it difficult to determine the original form. With the exception of a few in Ohio, Indiana and northern Illinois, works of this

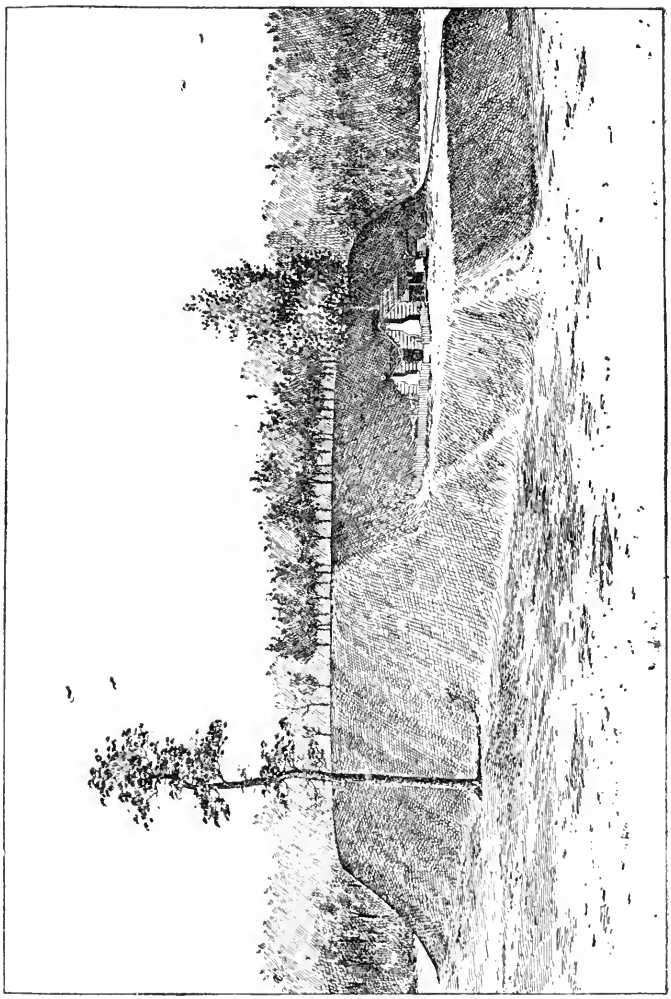

Fig. 11. Terraced mound, Arkansas.

type are limited almost exclusively to southern Illinois, south-eastern Missouri, Arkansas, Kentucky, Tennessee, South Carolina and the Gulf States. The two most extensive groups in the division, consisting chiefly of mounds of this form, are widely separated; one is located in Illinois a few miles east of St. Louis, which includes the giant Cahokia mound, and the other near Carthage, Alabama. The best examples of terraced mounds are found in eastern Arkansas, one of which is shown in the annexed figure. (Fig. 11.)

There is a somewhat different form from either of those mentioned which is intermediate between the conical and pyramidal types, though classed here with the latter, as a personal examination by the writer of examples widely separated geographically, has convinced him that they are slight modifications of the pyramidal type with ramps. Examples of both forms are seen together in the "Rich Woods" group, south-eastern Missouri. In this class the main tumulus is really conical or oval, usually with a ramp extending outward on one side in the form of a ridge; or oval in form and the whole upper surface slightly rounded and sloping toward one end.

The most singular earthen structures found on the continent are those representing animals, and usually known as "Effigy Mounds." They are limited geographically, almost exclusively, to Wisconsin and the immediately adjoining portions of Illinois and Iowa; some two or three are found in Ohio and two in Georgia; it is reported that some examples have been discovered in the "Bad Lands" of Dakota; this, however, has not been confirmed. The animals which

are represented, so far as they can be determined, are those known to the modern fauna of the region occupied, the supposed elephant mound being in all probability intended for a bear, as the proboscis appears to have been an accidental addition of shifting sand, varying in shape at different times, which had entirely disappeared when the survey under the author's direction was made in 1884. (Fig. 12.)

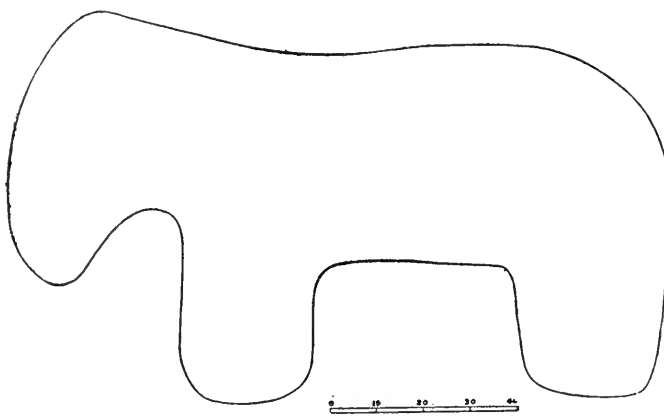

Fig. 12. Elephant mound, Wisconsin.

Examples of this type are seen in Fig. 10. The author may be excused for expressing his surprise at the truly imitative curving and rounding of the body of the animal in some of the examples which have come under his observation. Standing at the extremity of one which has suffered but little weathering (as the bear in Fig. 10), he was almost persuaded that the builders had the animal lying before them as a model. The greater number, however, are but rude representations, yet there is never any difficulty in assigning them to the proper classes. They vary

in length from fifty to four hundred feet, and in height from a few inches to four or five feet. Where placed near streams the heads usually point down stream.

As a general rule, no special order appears to have been observed in the arrangement of mounds in groups, these being scattered irregularly over the area occupied, the position being governed to some extent by the topography. There are, however, some exceptions to this rule. A somewhat remarkable one occurs in the region where the effigy mounds prevail. Here we frequently find the conical tumuli of a group arranged in one or two lines, usually straight or nearly so, and somewhat evenly spaced. This may be attributable in some cases to the topography, yet there are a number of instances where this arrangement has been adopted on level areas of ample extent, and where no special reason therefor is apparent. What renders this the more interesting is the fact that in the same section lines of similar mounds frequently occur, where they are connected with one another by low embankments. An example of this kind is seen in Fig. 13. The surrounding walls of

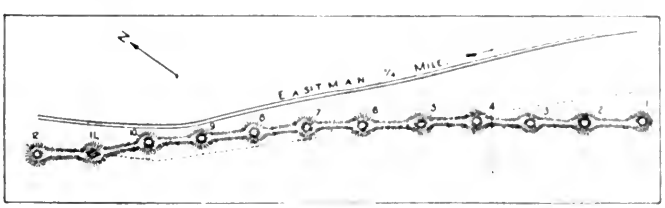

Fig. 13. Group of chain mounds, Wisconsin.

the noted group in Wisconsin, known as "Aztalan," and an extensive group in Vanderburg county, In-

diana, appear to be but slight modifications of the chain-mound type. As the elongate mounds are found in the same section, it is possible that the three types—lines of conical tumuli, chain mounds, as the connected series are named, and the wall mounds—are steps in an evolutionary process, probably from the solid to the separated.

So far as mounds of these series have been examined, no evidence has been found to justify the belief that they were intended as burial-places. On the contrary, as they are usually low and flattened, and frequently contain indications of fire, they are believed to be house or wigwam sites. One of the groups containing mound series of these types is in the precise locality Winnebago Indians are known to have occupied.

Although rich, dry alluvial areas in the vicinity of a stream or a lake were favorite localities with the mound-builders, the necessity for guarding against the approach of enemies, of being in the vicinity of a food and water supply, and other reasons which governed the location of native villages, varied this rule. Hence we find numerous ancient works on the restricted summits of hills and bluffs, on the islets and hummocks in the midst of swamps and marshes, and along the narrow valleys and even defiles of mountain regions. Nor are they wanting on the bottom lands of large rivers where the area is subject to occasional overflow. From these facts may be legitimately drawn the inference that the ancient inhabitants who constructed these works were split into numerous hostile tribes, the stronger occupying the level and choice localities, while the weaker were forced to seek refuge

in the rugged regions or amid the swamps and marshes.

Some of the effigies of Wisconsin occur on quite steep hillsides, and others on crested spurs where the summit is so narrow as to necessitate lapping over from one side to the other; and some of the long mounds are found running directly or obliquely down quite steep slopes. In some instances, as in Calhoun county, Illinois, and north-eastern Missouri, long lines of conical tumuli, usually showing evidences of burial, occur on the sharp crests of ridges so narrow as to barely afford space for their construction. Occasionally they are placed immediately on the margin of a precipitous bluff. Hundreds of groups, some of which are quite extensive, are located on the low ridges and hummocks in the swampy regions of south-eastern Missouri and north-eastern Arkansas; in fact, one of the richest archaeologic fields of the Atlantic division is found in this section: it is pre-eminently the region of ancient pottery.

The general distribution of the mounds and other ancient works of that portion of the division in the United States may be seen by reference to the map compiled under the direction of the author and published by the Bureau of Ethnology in the 12th Annual Report. It is seen by examining this, that the areas where these prehistoric works are most abundant are central and western New York; eastern and southern Michigan; the banks of the Mississippi from La Crosse, Wisconsin, to Natchez, Mississippi; the central and south-western part of Ohio and adjoining portion of Indiana; central and western Kentucky; middle and eastern Tennessee; and the south-west corner of

North Carolina and north-east corner of Georgia. The east side of Florida is well dotted with shell-heaps. It would be interesting to refer to the suggestions which a study of this map brings before the mind, but this must be left chiefly to the reader. There are however one or two inferences which appear legitimate that may be properly mentioned here. One is that the greater numbers on some areas compared with others is owing in part to the more thorough exploration of these areas, yet it is not probable that future explorations will materially change the map in this respect. Another is that the statement frequently made by authors that the mound distribution continues through Texas is incorrect. It would also appear to be a fair inference, judging by the map, that there were no important movements of population to or from the south-west. The almost total absence of mounds east of the Alleghany Mountains is also a marked feature.

CHAPTER VI.

BURIAL MOUNDS.

Having studied the form and external appearance of these silent monuments of the past, let us remove the sod with which the growth of centuries has covered them and examine the interior to see what it has to reveal, what it has to tell us of the past. Tombs are often the treasure houses of savages and semi-civilized people. Guarded by superstition the treasures remain untouched until rifled by people of another race who have no fear of the deity invoked for their protection.

However, before seeking for the hidden treasures, we will try to answer the question, How did the ancient people do the work required in building these earthen structures? Though a mound seems to be but a simple heap of earth that called for no skill, yet the question is a pertinent one. The mound-builders had neither iron nor steel of which to form spades and shovels, nor had they beasts of burden to assist in the transportation of material. Stone hoes, wooden spades and bivalve shells were probably the chief implements they used for digging up the soil; and baskets, mats and skins borne by individuals were most likely the means they employed for transporting the material. Nor is this wholly conjecture, as stone implements well adapted to this purpose, especially if hafted, are found in almost every section. All these implements,

as we are informed by the early explorers, were used by the Indians in their agricultural pursuits. The large, roughly-chipped, leaf-shaped stone implements so abundant in some sections, scores of which were found by the agents of the Bureau of American Ethnology at a single point in southern Illinois, were doubtless used for this purpose. The thin-bladed, so-called grooved axes are supposed to have been used, when transversely hafted, partly as digging implements.

It is often the case when a mound is carefully excavated and closely scanned as the work proceeds, especially where the material is clay or muck, that the individual loads can readily be discerned. As the earth of which the mounds are composed is usually gathered up from the surrounding surface, the interior will vary in color and character only as the soil so gathered up varies. This may be illustrated by a partial section of a Mississippi mound shown in Fig. 14. Here the lower stratum (No. 5) is black soil in lumps, or small masses, presumably the top soil of the surrounding surface; No. 4 red earth in small masses; No. 3 (the grey streak not numbered in the figure) red clay; No. 2 grey clay; and No. 1 the top covering accumulated since the mound was built. However, very many of the mounds are stratified in such a way as to show that this has been done intentionally, even where it was necessary to bring the material for one or more layers from a distance of a fourth, or a half a mile, or more. The places from whence material was taken to build the small or moderate sized mounds are seldom discernible at the present day, but depressions plainly mark the points about the larger works, as the

Cahokia and Etowah mounds and some of the inclosures of Ohio and elsewhere. In some cases the one act has been made to serve two purposes, that is to say, the earth used to construct the mound or other work has been taken from one or two points so as to leave a basin-shaped excavation for holding water, or

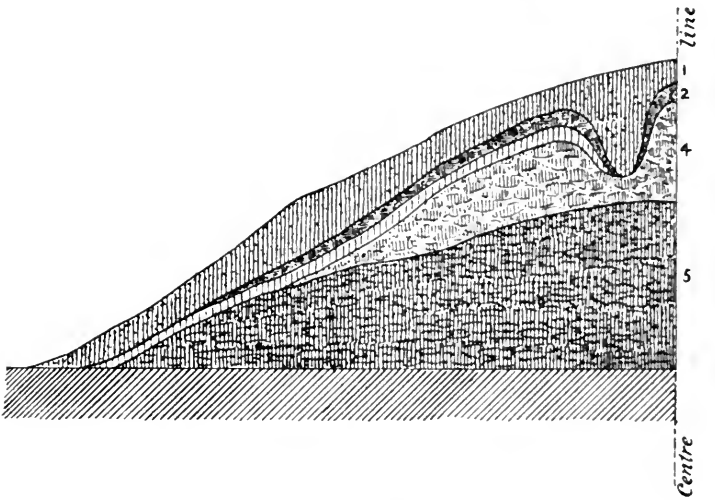

Fig. 14. Section of a Mississippi mound.

to form a trench to serve as a protective moat, or for drainage or other purposes. In some cases the earth has been taken from a trench immediately around the mound. The latter are interesting, as it would seem therefrom that the comparative size of the mound had been determined before beginning the work.

Mr. Gerard Fowke, who has had considerable experience in excavating mounds in various sections of

the country and of almost every form known to the division, has expressed the opinion that a mound one hundred feet in diameter at base and twenty feet high, could have been thrown up by a hundred men, with the means the mound-builders had at hand, in forty-two days. Marquis de Nadaillac objects to this assertion as one negatived by all the data obtained. However it is rather a question of practical mathematics than of archaeology. A simple calculation is all that is necessary to show that twenty-five loads, each containing half a cubic foot of earth, carried per day by each man, would complete the mound in forty-two days. As the usual distance the loads had to be carried was from fifty to a hundred yards, and the loose top soil was selected, twenty-five loads of half a cubic foot each is not an unreasonable allowance. The single loads, as plainly indicated by the little biscuit, or pone-shaped masses in many of the mounds, certainly exceed in size this estimate. It would appear, therefore, that Mr. Fowke was warranted in his conclusion.

The internal arrangements or modifications relating to or having connection with burials are so various that only the more common and important can be referred to here. A type quite common in the northwestern portion of the division, is that, where a slight excavation has been made in the original surface of the ground to receive the body or bodies, or more likely skeletons, as in many, if not a majority of cases of this type, the flesh has been removed before burial, the lower limbs drawn up, or the bones disarticulated and bundled, or stretched out horizontally and the

mound heaped over them. It was not unusual to form the first or lower layer thrown over them of tough clay, which must have been, in some instances, in a plastic state when deposited, as may be judged by the way it has worked itself into the cavities of the skull. Sometimes the entire mound consists of this hard clay layer. In mounds of this class intrusive burials are readily distinguished from the original ones.

The simplest method of burial, of which examples are found in most of the sections, was to lay the outstretched body or bodies on the surface of the ground and heap the earth over them. In Ohio and West Virginia some examples occur where the surface of the ground was first smoothed and packed: over this was spread a floor of bark, on which was sprinkled a layer of ashes a few inches thick. The body was then laid on the ashes and covered with bark, and over this the mound was heaped. In some cases the bodies are found in a sitting posture, and where there are several they are sometimes facing one another. It is probable, however, that some of the cases recorded, especially in the north-western section, were really bundled skeletons, the fact that the bones were in a heap, with the head on top, being taken as proof that they were originally in a sitting posture.

In a majority of cases, no rule in regard to the position of the bodies relative to the cardinal points was observed. Fig. 15 shows the stratification of a mound in eastern Tennessee containing a large number of skeletons all in the lower layer (g, g,). The explanation of this figure is as follows:

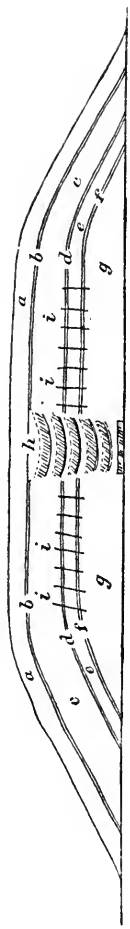

Fig. 15. Section of a mound in eastern Tennessee.

a, *a*, Dark layer of sandy soil, 1½ feet thick.

b, *b*, Thin layer of burnt clay, 3 to 4 inches.

c, *c*, Dark sandy soil, 2½ feet.

d, *d*, Second layer of burnt clay, 3 inches.

e, *e*, Dark sandy soil, 1½ feet.

f, *f*, Third layer of burnt clay, 3 inches.

g, *g*, Dark mucky soil (about 4 feet) resting on the original surface of the ground.

h, Central shaft of alternate dish-shaped layers of burnt clay and ashes.

i, *i*, Remains of upright cedar posts.

Although all the skeletons were in the bottom layer, they were not all, nor even the greater part, resting on the original surface of the ground, but at different depths. All were stretched out horizontally except two; one of these was in a sitting posture, and the other folded up and lying on its right side, and was probably buried after the flesh had been removed. It was judged from the indications that some, at least, of the burials were made in this way: the body, after being deposited, was covered with a layer of cane or brush; over this was spread clay or muck in a plastic state, and upon this a fire was built. Among the relics found in this tumulus were earthen pots and basins, generally at the heads of the skele-

tons (Fig. 16); shell beads, shell ear ornaments (Fig. 17) and hair-pins(?); engraved shells similar to that shown at Fig. 18; soapstone pipes (Fig. 19); flint

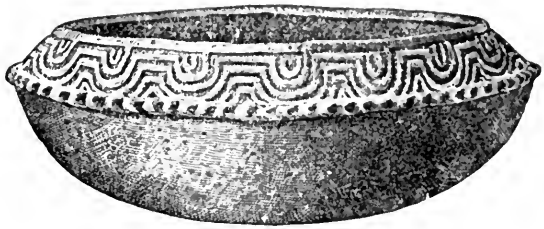

Fig. 16. Earthen pot, east Tennessee.

arrow and spear heads; polished celts; discoidal stones; bone implements; and one *iron chisel*, which was by a skeleton. As the skeleton and iron chisel lying with it were in the layer, *g*, *g*, they must have been placed before the unbroken stratum, *f*, *f*, and the other undisturbed strata above were deposited, and hence can not possibly be attributed to an intrusive, or even after burial. It is evident that burials in the mound ceased when layers, *f*, *f*, and *e*, *e*, were deposited, unless these layers were cut, of which there was no evidence.

Fig. 17. Shell ear ornament or hairpin.

In another large mound in the same valley and belonging to the same series, the plan appears to have been exactly reversed: the bottom layer, which was level and not rounded on top, was not used for burial

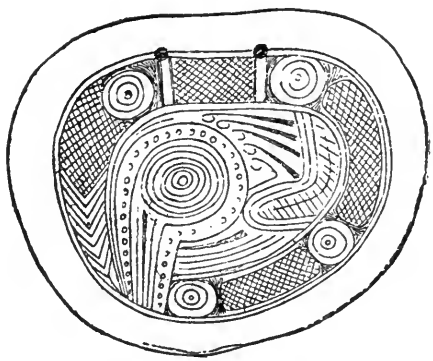

Fig. 18. Engraved shell, North Carolina.

purposes, the heavy single layer above it containing all of the ninety skeletons unearthed. This valley of the Little Tennessee was occupied, from prehistoric

Fig. 19. Soapstone pipe, east Tennessee.

times until their removal, by the Overhill Cherokees, whose villages were located on the precise spots where the mound groups are found.

Another form of burial has been observed in west-

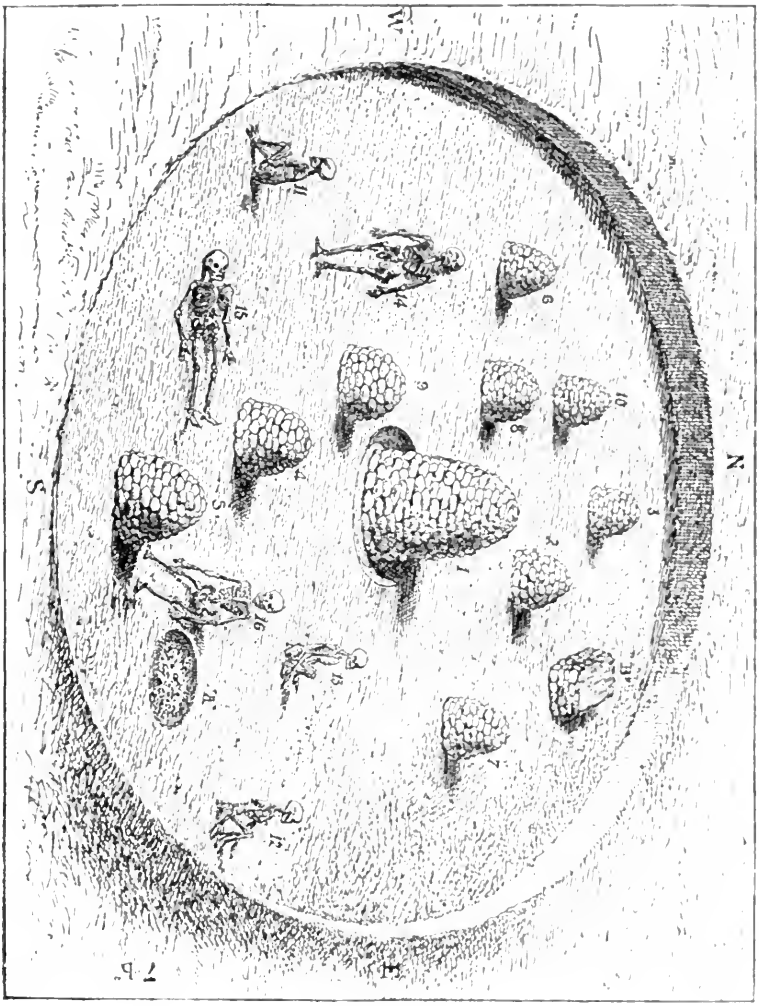

Fig. 20. Beehive vaults, North Carolina.

ern North Carolina. Here a circular or triangular excavation to the depth of two or three feet was made: the bodies (or skeletons) were placed on the bottom, usually in a sitting posture, and most of them covered with beehive-shaped vaults of cobble-stones (Fig. 20). In one instance, in Eastern Tennessee, instead of an excavation, a wall was built of cobble-stones on the surface of the ground, and the vaults arranged within it. Similarly shaped burial vaults, of hardened clay, have been discovered in West Virginia mounds. Many important relics were obtained from the North Carolina mounds; among other things some of the finest specimens of engraved shells which have been found in the United States (Fig. 18); also soapstone pipes with stems, bearing a close resem-

Fig. 21. Soapstone pipe, North Carolina.

blance to the old-fashioned clay pipes of the whites (Fig. 21). It is somewhat singular that although James Adair, in his "History of the American Indians," describes the soapstone pipes made by the Cherokees as precisely of the form of what is known as the "Monitor Pipe," mentioned below (Fig. 46); none of those discovered in North Carolina or east Tennessee mounds are of precisely that form, though probably modifications of it.

Another important mode of burial, both in mounds and in cemeteries, was in box-shaped stone sepulchers,

These appear to have been constructed as follows: In a pit some two or three feet deep and of the desired dimensions, dug for the purpose, a number of flat stones are placed to form the floor; next, similar pieces are set on edge to form the sides and ends, over which other slabs are laid flat, forming the covering; the whole, when finished, making a rude, box-shaped coffin or sarcophagus. Sometimes the bottom layer was omitted. Graves of this kind occur often in great numbers in southern Illinois, Kentucky, middle and east Tennessee, north-eastern Georgia, and at certain points in Ohio, though the sections of greatest abundance are southern Illinois and middle Tennessee. Mounds in these last-named sections are frequently made up almost entirely of sepulchers of this type, generally placed without regard to system and sometimes in two or more tiers. One or two, however, have been found in middle Tennessee, in which the graves were arranged like the spokes of a wheel, the heads being toward the center. In the center of the mound, the point from which the sarcophagi radiated, was a large clay vase or basin-shaped vessel. There were two rows of coffins, one outside of the other. Although the skeleton is usually stretched at full length on the back, in some cases the bones of adults have been disarticulated before burial, and packed into stone graves of this type not exceeding two feet in length and nine inches in width; and occasionally two and even three skeletons are found in a single grave. A cemetery in Tennessee composed chiefly of small graves of this type was, for a time, supposed to be the burial-place of a race of pigmies, but a more thorough examination showed

the graves to be the depositories of disarticulated skeletons and children. There is usually no special order in which these graves are arranged; a cemetery exhibiting the greatest regularity of any yet discovered is shown in Fig. 22. It is proper, however,

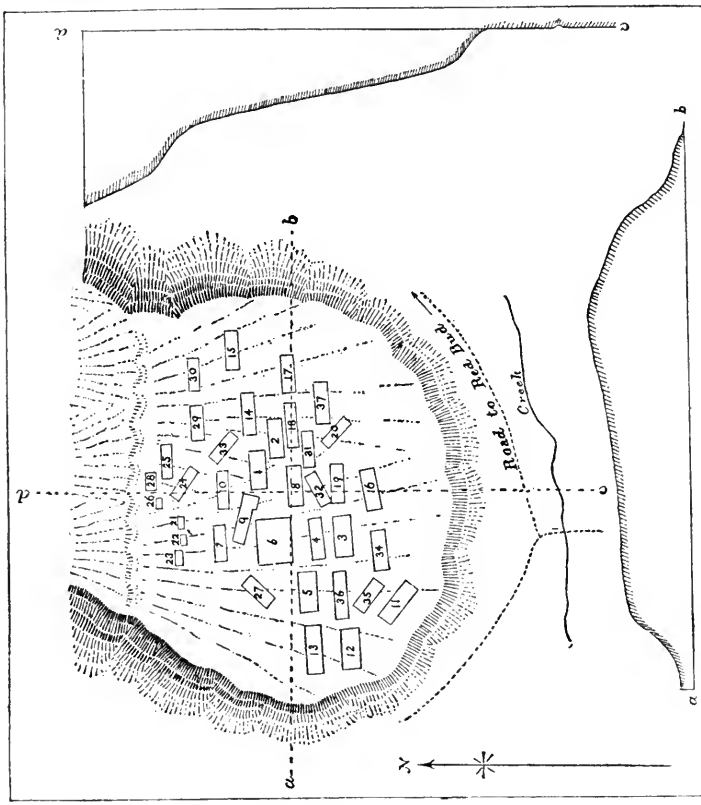

Fig. 22. Stone-grave cemetery, Illinois.

to remark that some of the burials of this type in southern Illinois appear beyond any reasonable doubt to have been made by Indians after the advent of the whites. A Kaskaskia Indian is known to have been

buried in this kind of a grave in Jackson county, Illinois, in the early part of the present century.

Mounds are often found to cover vaults of wood or stone. In some instances these vaults are square, oblong, or circular inclosures, built up to the height of two or three feet, of unhewn stone, laid without the use of mortar. Occasionally they seem to have been covered with timbers, but more frequently they have been simply filled with earth after the bodies were deposited within them. Dome-shaped stone vaults also occur. In most cases, however, these have partly fallen in, hence the restorations may not be strictly correct. Wooden vaults or chambers of two types have been discovered in Ohio and West Virginia. One of these is a simple pen, usually square, built of round logs; the other of logs placed upright around the inclosed space. In two or three instances, two vaults, one above the other, were made in the same mound. These are spoken of as vaults, yet it is possible that, in some instances, they may have been built for some other purpose than that of a tomb or burial-place.

Stone graves and vaults are seldom found in the mounds of the Gulf States. Usually the skeletons in this section are in a horizontal position, generally without any rule in regard to direction. Exceptional cases occur in which all the bodies in a mound, or most of them, are placed with the head in one direction or arranged in a circle with heads toward the center. A few instances have been noticed in southern Georgia where the body had been buried in a sitting posture, a post having been driven into the ground and the dead lashed to it with the back against it.

In some of the Arkansas groups, many of the skeletons have been found closely folded, though seldom in a sitting posture. It appears from the evidence obtained by the exploration of many of the low, conical mounds of the latter section that usually these were at first but house-sites, but death occurring in the family, the dead were buried in the floor, the house burned over them, and dirt heaped over the smoldering ruins. Sometimes the same mound was used again as a dwelling site and burial-place.

Burial in ossuaries, or "bone-pits," was a common mode in some parts of Canada, and not unknown south of the lakes. It is supposed that, in some instances at least, these are the places of communal burial, made at the "Great Feast of the Dead," when the bones of those belonging to the tribe, village or band, who had died during the previous ten or twelve years, were deposited in a pit dug for this purpose. Some of these contain as many as a thousand skeletons, and according to the Report of the Canadian Institute a number of them are known to be of "post-European date," as copper and brass kettles have been found in them.

That inhumation was the usual method of finally disposing of the dead in this division, is indicated by what has already been mentioned, and a somewhat careful study of all the data leads to the conclusion that it was almost the only method adopted by the ancient inhabitants. It is true, that coals and ashes are of frequent occurrence in burial mounds, and that partially burnt human bones are occasionally found, giving rise, in the minds of many archaeologists, to the opinion that cremation was often

practiced by the mound-builders, and that human sacrifice was not infrequent. It is probable, however, that these indications are due to other and quite different customs, though it must be admitted that a few instances have been noticed where it seems evident the bodies were intentionally burned, but these are extremely rare.

That fire was very frequently used in connection with, or as part of the burial ceremonies, is certainly true, but the evidence, when carefully studied, tends to show that the burning of the bodies or bones, where this has occurred, was, with few exceptions, accidental rather than intentional. In Arkansas, where the excavations show that the house was burned over the dead, the bodies were, in nearly every case, covered with sufficient earth to protect them from the fire. In Wisconsin and northern Illinois it was not an uncommon custom to cover the primary burial with a layer of clay or mortar-like material, and then burn brush or other material on it before completing the mound. Evidences of a similar method were also observed in some mounds of eastern Tennessee. Evidences of fires burned over vaults have been observed in Ohio, West Virginia and North Carolina. In several instances, from want of proper care in forming the covering, or on account of the fierceness of the fires, the bones have been scorched, or partially burned, rendering it highly probable that the flesh had, in these cases, been removed before burial. From the fact that in one of the mounds of eastern Tennessee burnt clay beds were found covered with ashes and coals, in which were burnt human bones, and in the center of each the charred remains of a stake, it is inferred

that captives were tortured and burnt here. The statement by Haywood in his "History of Tennessee" and Ramsey in his "Annals of Tennessee," that a Mrs. Bean, who was captured by the Cherokees, was taken to a mound in the same locality as that mentioned above, to be burnt, though saved by one of the Indian women, not only strengthens this supposition, but indicates some relation between the Cherokees and the builders of these mounds, or the use of them by the Indians for at least one purpose for which they were used by the builders. It is possible, however, though not probable, that these may have been instances of burial of the kind mentioned by Col. C. C. Jones ("History of the Southern Indians") as occurring in some Georgia mounds, where the body was placed in a sitting position and strapped to a stake. A burial of this kind, which occurred in Arkansas as late as 1834, is described by Mr. Poynter in the Smithsonian Report for 1882. The house in which the family of this Indian (Wal-ka-ma-tu-ba) lived was built of round logs, covered with bark and daubed with mud. In the middle of the house a board was driven about three feet into the ground, and the old man was lashed to this with thongs, in a sitting posture, with his knees drawn up in front of his chin, and his hands crossed and fastened under his knees. The body was then entirely encased in mud, built up like a round mound and smoothed over. A fire was kindled over the pile and the clay burnt to a crisp. Six months later the family moved away and the mound was opened and the body found to be well preserved. This will probably explain the method in the cases mentioned by Col. Jones; and

will also give a hint as to the custom which produced the burnt clay beds so often found covering burials, but not the dish-shaped beds in the mounds on the Little Tennessee, where more likely torture by fire was practiced.

A somewhat peculiar custom prevailed among the mound-builders of north-eastern Missouri, which, if rightly interpreted by the explorers, leads to the supposition that in some cases the body of the dead was intentionally burned. The mounds are composed wholly of earth, partly of earth and partly of stones, or wholly of stones. In the two latter, the bodies buried in them are covered with stones, or are inclosed in stone receptacles of various forms. In a few cases, these receptacles are box-shaped cysts, similar to those heretofore mentioned. The condition of the other mounds indicates that the builders had burned the bodies of the dead, then gathered up the charred bones and ashes and mixed them into a mass with clay. Where the bodies were buried without being thus treated, a flat stone was sometimes laid on the head.

There are other mounds which may be included in the burial class, though it is not apparent that they were, at least in many cases, erected for this purpose. One type, to which the name "altar mound" has been applied, is characterized by having, usually at the bottom on the original surface of the ground, a regularly-shaped mass of burned clay, with a basin-like depression in the middle. These masses are supposed by some leading authorities to have been "altars," on which sacrifices were made or some religious act performed. There is, however, no valid reason for this

supposition, nor any evidence which seems to justify it. Although Messrs. Squier and Davis, who advanced this opinion, found no evidence of burial in the mounds of this type which they excavated, some of those subsequently examined by other explorers appear to have been used as depositories of the dead. Mr. Moorehead gives an instance in his explorations of Ohio mounds, in which the "altar" basin was occupied by a single skeleton, the remains, most likely, of one who held some position of note among the people, who thus honored him in his burial. Others of the same type, in Ohio, north-western Illinois, and West Virginia, have been used as burial-places, though the bodies were not placed in the clay basin.

A few mounds in eastern Iowa and western North Carolina, and one at Prairie du Chien, Wisconsin, have been found, when explored, to contain oblong, altar-shaped masses, symmetrically built of cobble-stones, some of which showed no indications whatever of fire, while others were covered with a layer of charcoal and ashes, in which were imbedded skeletons or human bones bearing no marks of heat. Some of these were evidently burial mounds, while others gave no indications of having been used or intended for this purpose.

CHAPTER VII.

VESSELS, IMPLEMENTS AND ORNAMENTS.

While, on the one hand, the local monuments, by their forms, character, size, condition, topographical position, etc., furnish some evidence as to the age in which the builders lived, their sedentary habits, mode of life, the relative tribal strength, culture status, and whether in a state of peace or war; on the other hand, it is chiefly from the modes of burial and the minor products of art we are enabled to judge of their domestic life and customs, and to gain some knowledge of their superstitions and religious beliefs. Notice of a few of these minor vestiges of art has been given in connection with the description of the burial mounds and modes of burial, but it is necessary, before dismissing the subject, to devote a chapter to their consideration.

The first step in the study of these art products is to learn their history from the moment they were brought to light until they fall into the student's hands; in other words, to know positively that they are genuine mound relics, for it is hazardous to build up a theory on an unauthenticated specimen, especially when it presents unusual features. It is to be regretted that the lack of knowledge in this respect in regard to many of the articles, even in the best archaeological collections of our country, has materially lessened their value in the eyes of critical students and specialists. However, the collections of

recent years have been made with more care and discrimination, and more care has been taken to see that the records are correct.

As the relation of the articles found in a mound to the bodies deposited therein is of more or less importance in this study, a few examples will be given, taken chiefly from those with which the author is personally familiar—selecting, of course, those which appear to be of most importance in this respect.

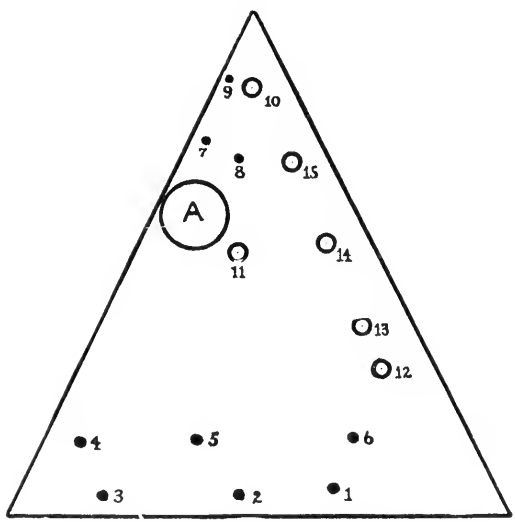

Fig. 23. Triangular pit, North Carolina.

The first we notice is a triangular pit in Caldwell county, North Carolina, probably the only example of a regular triangular form which has been observed. An outline sketch, showing the relative positions of the skeletons is given in Fig. 23. Nos. 1–9, single uninclosed skeletons, lying horizontally on their backs, heads east or north-east; 10–15, stone vaults,

similar to those shown in Fig. 20, covering skeletons, each, except 11 and 14, containing a single skeleton in a sitting posture and unaccompanied by any article. Nos. 11 and 14 were covered graves, each containing two horizontal skeletons, one lying on the other; heavy stones were laid on the legs and extended arms; no accompanying articles. By the head of No. 2 of the uninclosed skeletons was a broken soapstone pipe; Nos. 5 and 9, one small polished celt each.

At A were ten or more skeletons (there were ten skulls) in a group, which appeared to have been buried at one time. The principal personage lay in the midst of the group, stretched horizontally on the ground, face down, head north-east. Under his head was a large engraved shell, similar to that shown in Fig. 18; around his neck a number of large shell beads; at the sides of his head five elongate copper beads, or rather small cylinders, part of the leather thong on which they had been strung yet remaining in them. A piece of copper lay under his breast; around each wrist were the remains of a bracelet composed of copper and shell beads alternating; at his right hand lay four iron implements, one a roughly-hammered celt; another, part of a blade; another, part of a punch or awl, with deer-horn handle. Under his left hand was another engraved shell, the concave surface upward and filled with shell beads of various sizes.

Around and partly lying over this skeleton were nine others. Under the heads of two of these, lying within a foot of the head of the first, were several engraved shells of the type shown in Fig. 18. Scat-

tered over and among the bones of these ten skeletons were some twenty-five or thirty polished celts, a number of discoidal stones, a few copper arrow-points, some pieces of mica, lumps of paint and graphite, and more than a dozen soapstone pipes.

Thus it will be seen that the contents of this single depository of the dead, of which the above is only a brief and partial account, not only give us valuable hints as to the arts and customs of the people, but furnish a basis for numerous conjectures.

The fact that there was no mound over the pit, the top being nearly or quite on a level with the natural surface, and that the entire depth to the bottom did not exceed three feet, excludes the idea of any very great age. The annual decay of vegetation for two or three thousand years, or even for half a score of centuries, would, under ordinary circumstances, in a forest-covered region as this was, have covered the area with mold to the depth of two or three feet; yet it is evident that the accumulation here must have been less than one foot thick, as the bottom of the pit was in some places not more than two feet and a half below the original surface. It may be said that the same statement is equally applicable to many other ancient works of our country. This is true, but it only serves to raise the question, what is the inference to be drawn therefrom? If we assume, as the author believes to be the correct theory, that the builders were Indians, and in all probability Cherokees, who inhabited this region from the earliest knowledge we have of it, the difficulty in this respect vanishes, and conjectures are limited to a much narrower field than otherwise. But aside from any theory in this respect,

the indications are decidedly against any very great age. The stone implements are of the neolithic type: the engraved shell gorgets, on which the figure is the conventionalized serpent, found in graves and mounds not only of this region but also of eastern and middle Tennessee, possibly refer to a cult or superstition widely diffused among the aborigines of America. The presence of iron implements, which analysis has shown were not made of meteoric iron, indicates contact, direct or indirect, with a people who had learned the use of this metal. The assumption that this was a comparatively modern burial-place, and not one pertaining to the true mound-builders, only serves to introduce an equally troublesome difficulty on the other hand. The carved shells have been found in so many mounds and stone graves that they are recognized by all archaeologists as genuine mound-builder relics.

Whatever may be the conclusion reached on these points, the surmise to which the group of ten skeletons gives rise is not affected thereby. That the central figure had been a person of importance among his people is apparent from the ornaments with which he was decked and the manner in which he was surrounded by other bodies. Had they been slain to accompany him into the unseen land? This would, perhaps, be a reasonable conclusion if we could be assured that these were not skeletons taken from some house of the dead or other burial-place. Adair mentions an instance where, on the death of a chief's son, captive women were slain to accompany him.

Mr. Moorehead mentions an instance ("Primitive Man in Ohio") where the following articles were

found about a single skeleton: Upon the ground at its feet a copper plate covered with the remains of cloth; about the head and neck six hundred and six pearl beads, all drilled; among the vertebrae eight perforated bear teeth and three spool-shaped ornaments; and between the legs twenty shell beads.

As an illustration of a more general distribution of articles among the skeletons, the following summary of the account in the Twelth Annual Report of the Bureau of American Ethnology of the burials in an east Tennessee mound is given. The relative positions of the skeletons are shown in Fig. 24, the depth at which they lay from the upper surface varying from two and a half to eight feet. Length of the mound, 220 feet; greatest width, 184 feet; and height, 14 feet. The articles found with the respective skeletons as numbered in the cut were as follows:

With Nos. 4 and 10, each, two broken pots; Nos. 5, 6, 9, 13, 17 and 51, each, one broken pot; No. 16, one polished discoidal stone, one soapstone pipe, one broken pot, one rough discoidal stone, and one engraved shell; No. 18, two polished celts, five arrowheads and some flint nodules; No. 21, one unbroken pot and polished celt; No. 22, one polished celt; No. 26, one pot and two polished celts; No. 31, one broken pot and one polished celt; No. 33, one engraved shell and polished celt; No. 34, two broken pots, one polished stone chisel, one discoidal stone and one stone gorget; No. 35, two polished celts; No. 39, one polished celt; No. 41, one engraved shell; No. 44, four polished celts; No. 46, one broken pot and one discoidal stone; No. 55, one polished celt; No. 57, one bowl, one shell mask, two shell pins,

two bone awls or punches, and a number of shell beads: No. 58, three bone implements; No. 59, two shell gorgets, one engraved shell, one shell ornament, one shell pin, one bear tooth and one discoidal stone;

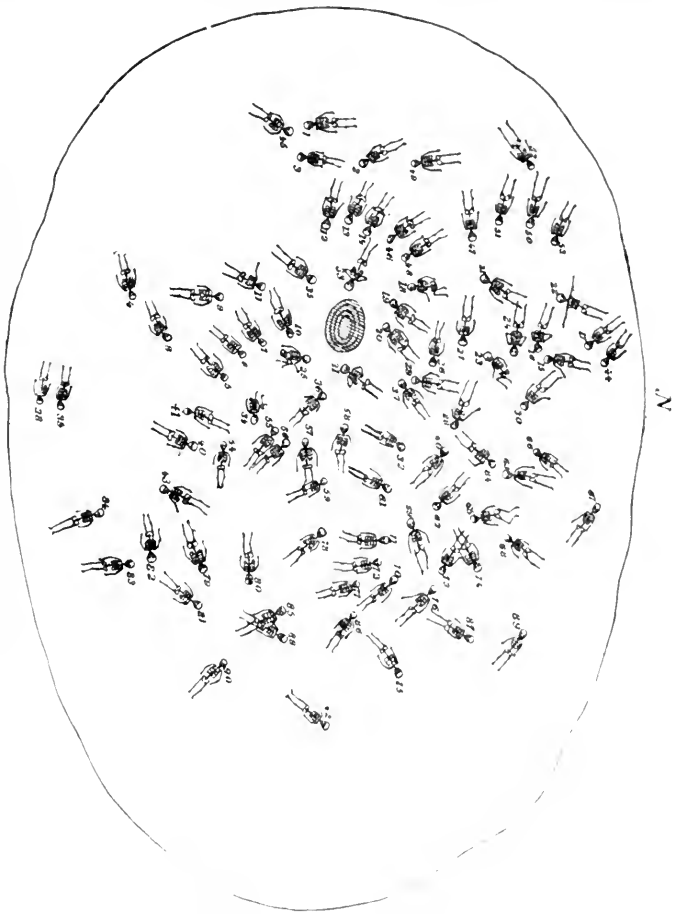

Fig. 24. Positions of skeletons in an east Tennessee mound.

No. 62, a lump of red paint, a number of shell beads, four shell pins, one bear tooth, one discoidal stone and one ornamented pot; No. 63, one broken vessel

with animal head; No. 66, (child) one moccasin-shaped pot, four copper hawks'-bells or rattles (Fig. 25), and a number of shell beads; No. 68, three shell pins and one ornamented pot; No. 71, four shell pins, a number of shell beads, ornamented bowl and lump of red paint; No. 79 (child), one shell mask or gorget, one engraved shell, a number of shell beads and two shell pins; No. 81, two ornamented pots, two shell pins, a number of shell beads and a lump of red paint; No. 89 (child), one pot, one engraved shell, thirteen shell pins, one plain shell gorget and eight hundred and forty-six shell beads; No. 90, one bone needle.

Fig. 25. Copper hawk's-bell, east Tennessee.

As we find no skeleton in this mound accompanied by a much greater number of articles than the others, it may be a fair inference that no chief or person of pre-eminent importance in the tribe was buried here. It is also interesting to observe the evidence of affection for the children shown by the number of articles buried with them.

These samples, which, of course, are mounds unusally rich in relics and remains, and can not be taken as types of burial mounds in general, will serve to show the relation of relics to the skeletons.

Referring now to the types and forms of the vessels, implements, ornaments and other products of the mound-builders' art, attention will be called at the same time to the geographical distribution of some of the more important of these. It is chiefly by the range of the leading types of art that the minor cult-

ure areas can be outlined. But it is necessary that we should bear in mind that these lines may vary widely from the ethnic lines, or lines which mark the boundaries of tribes or peoples. And this is undoubtedly true in regard to some of the leading types of the minor products of the mound-builders' art. It is found in the range of some types of pottery, and also in the range of the carved or ornamented shells which have already been incidentally mentioned.

Pottery.

Although the potter's wheel was a contrivance unknown to aboriginal America, the art of manufacturing pottery was not only known to the more advanced people of Central and South America, but was understood and practiced to a greater or less extent by the prehistoric tribes of the greater portion of the mound-builders' section. However, the area where the art was chiefly developed is that named by Mr. W. H. Holmes, the chief authority on ancient American pottery, "The Middle Mississippi Province," embracing Arkansas, south-eastern Missouri, southern Illinois, Tennessee, parts of Kentucky, and the portion of Indiana bordering the Wabash. Both north and south of this section the pottery is much less abundant; and especially is this true in regard to the regions northward, being, in fact, rare in some areas. This division into northern, middle, and southern provinces is not wholly an arbitrary one, as it represents in a measure areas of different types of the fictile art.

In Canada, Michigan, New York, and extreme northern Ohio, substantially the same types as to material, form, and ornamentation appear to have pre-

vailed; however, some sections of the area mentioned are not represented by a sufficient number of specimens to afford an entirely satisfactory comparison. The method of preparing the paste in this northern province appears to have been somewhat different from that followed in the southern and middle provinces. While in the latter it was customary to temper the clay chiefly with powdered shells, in the north, sand, or, as Mr. Boyle, who has studied the Canadian pottery, says, burnt gneiss or granite, was used for this purpose. Mr. Holmes expresses the opinion that the northern pottery was molded in hollows of suitable size formed in sandy soil. Fig. 26 shows one type of the clay vessels of this region. Some, at least, of the vessels found in Iowa and northern Illinois appear to belong to the same general class. The walls are generally thick, and the margin of the rim usually squared off, showing the full thickness. The clay pots of Ontario are always round-bottomed; there are, however, occasional exceptions to this rule found in other parts of this northern province.

Fig. 26. Clay vessel, Canada.

The middle province was pre-eminently the pottery manufacturing region of the mound-builders, especially that portion embraced in eastern Arkansas, south-eastern Missouri, and middle Tennessee. These

are classed under the following comprehensive types: bowls, pot-shaped vessels, wide-mouthed bottles or jars, and high-necked bottles. The modification of these primary forms by the introduction of fanciful features given to the rim, neck or body is almost infinite, a few only of which can be represented here.

The bowls vary in size from the little toy vessel an inch in diameter and depth to fully twenty inches across the top, and from six to twelve inches in depth. The form of the body varies, so far as the opening and flare is concerned, from the saucer shape, or chopping-bowl form, to the globe with narrow opening. The fanciful shapes are made to represent, rudely, various animals, protuberances from the sides, or additions to the rims forming the head and tail; nor is the human form entirely omitted, as a head is occasionally seen on the rim. A few of these are represented in outline in Fig. 27, and some with shading and ornamentation in Figs. 16, 28, 29, 30,

Fig. 27. Outline figures of bowls.

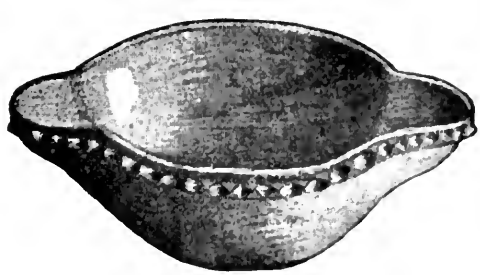

Fig. 28. Ornamented bowl, Tennessee.

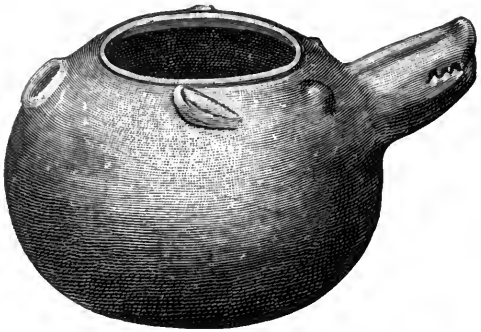

Fig. 29. Animal-shaped bowl, Arkansas.

Fig. 30. Bird-shaped bowl, Arkansas.

The Pot-shaped Vessels.—Although considered here as a class, vessels of this type are chiefly transitional forms between the globular bowls and wide-mouthed bottles. However, the frequent presence of ears, and certain other features, are so suggestive of the cooking pot that the name seems appropriate. They are seldom, if ever, furnished with fanciful additions, or marked with erratic figures, and the ornamentation is

Fig. 31. Pot-shaped vessel, Arkansas.

Fig. 32. Pot-shaped vessel, west Tennessee

slight and confined chiefly to the neck. Some examples bear a close resemblance to northern vessels of the same class. Two are shown in Figs. 31 and 32.

The Wide-mouthed Bottles.—Vessels of this class vary in form from the globular-shaped bowl, or olla to the true bottle shape. The typical forms of the body, as given by Mr. Holmes, are shown in Fig. 33. The eccentricities are usually in the shape

Fig. 33. Wide-mouthed bottles.

Fig. 34*a*. Opossum vase, Arkansas.

given to the body, as the neck, which is sometimes merely a slightly raised rim, is generally plain. Animal forms are those usually adopted in these variations. (Figs. 34, *a and b.*)

A remarkable vessel, representing the human head, is shown in Fig. 35, a type, of which some two or three specimens have been discovered. There is certainly nothing strongly suggestive of the Indian physiognomy in either of these; on the contrary, the features will probably be taken at first glance, by

Fig. 34*b*. Sunfish vase, Arkansas.

Fig. 35. Bowl representing the human head, Arkansas.

most persons, for Africans. Nevertheless, the more we study them the more doubtful does this conclusion become. The nose is small and the nostrils narrow. The general appearance is that of a female. An interesting design representing a winged and crested rattlesnake taken from an Arkansas bottle is shown in Fig. 36.

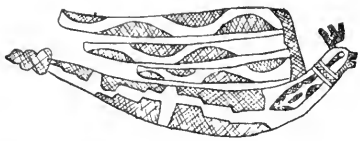

Fig. 36. Winged and crested rattlesnake design, Arkansas.

Long-necked Bottles.—These form the chief feature of the pottery of the region now under consideration, due perhaps in part to the endless variation of which the type is susceptible. Both neck and body in this class are modeled apparently according to individual fancy rather than after conventional forms. Although animal figures are not uncommon, the human form, especially that of the female, is most frequently represented. Outline representations of some of the simple forms are given in Fig. 37, and of some of the eccentric forms in Fig. 38. Some of these vessels were furnished with feet, either three knob-like, cylindrical or terraced feet, or a single solid or per-

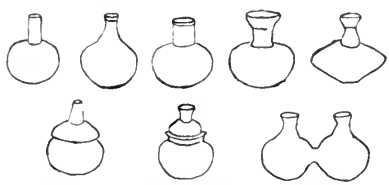

Fig. 37. Outline figures of long-necked bottles.

Fig. 38. Eccentric shapes in long-necked bottles.

forated foot. The specimen shown in Fig. 39, representing an owl, is interesting, as the same pattern

Fig. 39. Owl-shaped bottle, east Tennessee.

and decoration are found in New Mexico, eastern Arkansas and eastern Tennessee.

There is no apparent reason why we may not assume that the making of pottery began in this division coeval with the commencement of mound-building. Is there any reason to believe the manufacture had been discontinued when Europeans appeared on the scene? It is well known that the Indians of the Gulf States and south Atlantic coast were making pottery when visited by the early explorers. The Gentleman of Elvas, one of the chroniclers of De Soto's expedition, declares that the vessels of earthenware used by the natives (apparently alluding to the region of eastern Arkansas), differed little in quality from the Spanish ware. DuPratz, alluding to the same region, says: "The women make pots of an extraordinary size, jars with medium-sized openings, bowls, two-pint bottles with long necks, pots or jugs containing bear's oil, which hold as much as forty pints, and finally plates and dishes in the French fashion." And other writers speak of the Indians of the south making pottery down to comparitively modern times. DuPratz also speaks of their coloring vessels red. Now, it is apparent that we have in these notices mention of the same kinds of vessels as are found in southern mounds, even to the coloring, for this is often present on pottery from Arkansas and south-eastern Missouri.

If vessels were made in great numbers within the historic period in the same region as those found in the mounds, "it is reasonable to suppose," as Mr. Holmes says, "that they belonged to the great group of those under discussion. If not, it will be necessary to seek the cause of their total disappearance, since,

as I have said, the pottery of this district, as shown by the relics, is practically a unit."

The Gulf Province.—As the pottery of this province bears a strong resemblance in form to that of the middle section, we will notice here only two or three types, which in form or decoration present different features from those described. The most remarkable of these is the so-called "burial urn," found in some mounds of Georgia and South Carolina, one of which is shown in Fig 40. Some of these are the largest vessels made by the mound-builders, unless the supposed salt-pans, of which no complete specimen has been found, exceed them in size. The moccasin-shaped pot, of which one or two specimens have been found, is a very rare form. The vessel shown in Fig. 41 bears a close resemblance to the modern iron pot, being furnished with four legs, which is unusual in mound pottery.

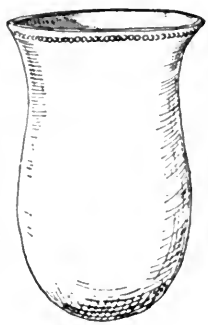

Fig. 40. Burial urn, Georgia.

Fig. 41. Vessel with four legs, Georgia.

Notwithstanding the frequent mention, in works relating to prehistoric America, of the vessels found in Ohio mounds by Messrs. Squier and Davis, ancient pottery is rare in that state. Mr. Moorehead, who has done much exploring in the state, remarks that "pottery is very rare in the tumuli of any section of Ohio;" however, the area about Madisonville appears to be an exception to this rule.

Pipes.

Judging by the number of pipes which have been found in mounds and graves, the ancient inhabitants of this division must have been sturdy smokers. However, the distribution of these articles is by no means uniform, as they are comparatively rare in some sections and abundant in others. This distribution, if thoroughly worked out, even with the materials so far obtained, would furnish valuable hints as to culture areas and ethnic relations. It is noticeable that their distribution does not correspond with that of the pottery; on the contrary, they are usually more abundant in the regions where earthenware vessels are comparatively rare, and of less frequent occurrence in the great pottery section. They constitute a marked feature of the archaeological collections of Canada and some other portions of the northern area; also of eastern Iowa, northern Illinois, Ohio, and what may be termed the Cherokee, or Appalachian district. They are rare in Arkansas and south-eastern Missouri; somewhat more common, though by no means abundant, in middle Tennessee and the Gulf States.

Articles of this class were made of clay or carved out of slate, soapstone, marble, or other stone. The variety of forms which individual fancy has introduced is almost endless, yet it is possible that they may, omitting from consideration the ornamentation and fanciful figures, be classed in a general way under the following types:

The stemless pipe, consisting simply of a bowl with an opening for the stem. Some of the simpler forms of this type are shown in outline in Fig. 42 (*a*, *b*,).

Of these, *a* and *b* are found almost exclusively in the northern section, and are known to have been in use among the Indians. Usually they are simple bowls, cylindrical, ovoid, or flaring at the top, or curved in the form shown in *a*, and more or less ornamented; others represent the human form, or animal figure, or

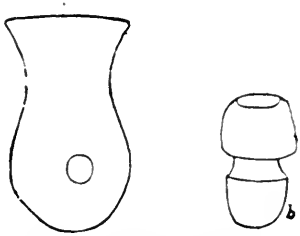

Fig. 42. Stemless pipes.

Fig. 43. Image pipe, Georgia.

some grotesque shape. Although pipes of this type are rare in the middle and southern districts, that shown at Fig. 43 appears to have been a somewhat favorite form with the Georgia mound-builders, and has also been found in middle Tennessee.

There is another stemless type, which, though of rare occurrence, should not be omitted from this brief summary. Specimens have been found, so far as known, only in Arkansas, Alabama, and Mississippi. They are of large size, varying from three to five inches in length, and from two to four in height. These usually represent a crouching, panther-like animal, or a man in the same position (Fig. 44). It is possible they were only used as ceremonial objects, and hence considered public property. If this were

Fig. 44. Image pipe, Arkansas.

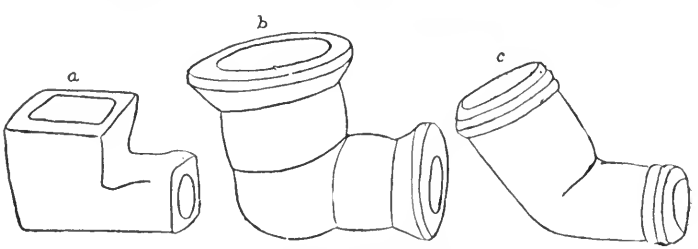

Fig. 45. Short-necked pipes.

so, it is not likely they would have been buried except on some unusual and memorable occasion. They are carved out of stone.

Another type or class is the short-necked pipe. The primary or typical forms are seen in the figure (Fig. 45, *a*, *b*, *c*.). These appear to present three varieties: the upright square bowl, the upright round, and the slanting bowl. The eccentric forms of this type are not numerous, consisting chiefly of a modification of the bowl to represent a human or animal head. They are found both of stone and clay.

A fourth type is the so-called "monitor pipe," in which the peculiar feature is the broad, flat, and usually slightly curved base or stem, which projects beyond the bowl generally to an extent equal to the perforated end (Fig. 46). They are varied indefinitely by the addition of animal and other features, these modifications being confined chiefly to the bowl. The typical forms are confined chiefly to Ohio and the region of eastern Iowa and the adjoining portion of Illinois. A slightly modified form has been found in Canada, New York, Massachusetts, West Virginia, and middle Tennessee. They are found only of stone, usually slate or steatite.

Fig. 46. Monitor pipe.

The long stem pipe, or rather pipe with a distinct stem, forms a fifth type. This type has been found very rarely, except in the northern and Appalachian districts; and the forms in these two sections are quite

distinct. Those of the northern section are of clay, those of the southern always of stone, usually soapstone. Mr. Boyle says the method of forming the Canada pipes of this class was to model the clay round a flexible twig or thong, one end of which entered the base of the bowl, and which, being allowed to remain there, disappeared during the burning process.

A sixth class is that embracing the elongate animal figures with the bowl on the back. The animal is sometimes a bird, sometimes a wolf, fox, or other quadruped, with legs drawn up against the sides of the body. Some are of very large size, and many of doubtful antiquity. They are all of stone, and are confined chiefly to Tennessee and the Gulf States.

A few specimens of the tubular pipe have been found in the Atlantic division, but these have been apparently introduced, or they are simply tubes having somewhat the form of the Pacific or California type. There is no reason for believing that a pipe of this form was ever in use in the Atlantic division.

CHAPTER VIII.

ARTICLES OF SHELL, COPPER, AND OTHER MATERIALS.

Shells appear to have been used quite extensively among the mound-builders as implements and ornaments and probably as a medium of exchange.

We have already noticed the fact that pulverized shells were used in tempering clay which was to be manufactured into pottery. It is probable that bivalve shells were used as scrapers in dressing hides, and to a limited extent as agricultural implements, as it is known that such use was made of them by the Indians along the southern coast. As they were not carved, it is probable they were not considered of sufficient value to accompany the dead. Nevertheless, it is not a very unusual thing to find unwrought shells in mounds.

The use of certain large univalves, especially the *Busycon perversum*, as drinking cups, probably on ceremonial occasions, seems to have been somewhat general in the southern section, and not entirely unknown further north. Specimens of the species named have been found as far north as the headwaters of the Mississippi river. The specimen shown in the figure is from an Arkansas mound. (Fig. 47.) Mr. Holmes, in his paper entitled "Art in Shell," Second Annual Report of the Bureau of American Ethnology, figures a number of shells which he

thinks were used as spoons or ladles. Most of these were made from the left valves of *Unios*.

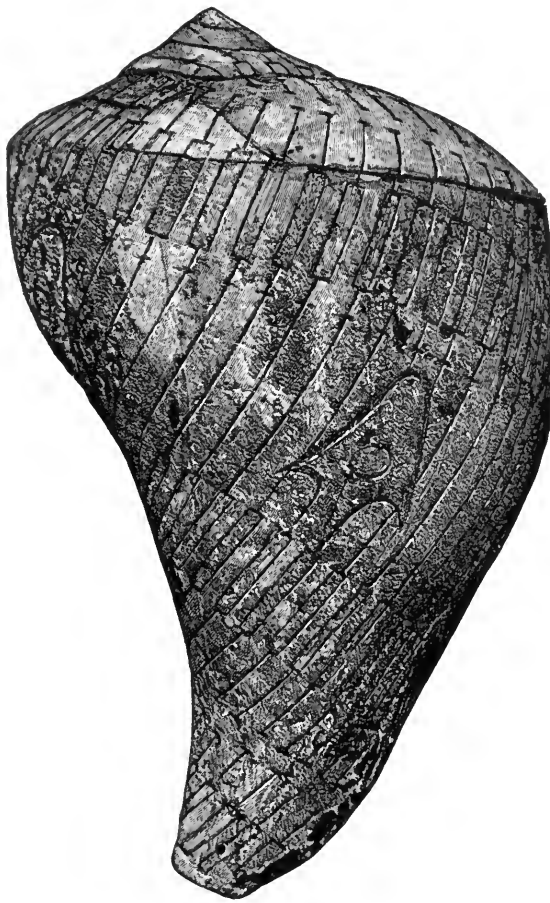

Fig. 47. Engraved shell, Arkansas.

Much the larger portion of the articles of shell found in mounds and ancient graves consists of those which have been used as ornaments.

Mention has been made of the shell pin, and an example shown in Fig. 17; another form with a smaller head is frequently found. Various suggestions as to the use of these articles have been presented, but it is probable the following quotation from Dumont's "Memoires Historique Louisiana" will give the correct explanation:

"There are still to be seen on the seashore beautiful shells made by snails (or limaçon), which are called burgaux; they are very useful for making handsome tobacco boxes, for they bear their mother-of-pearl with them. It is of these burgaux that the native women make their ear-rings. For this purpose they take the end of it which they rub a long time on hard stones, and thus give it the form of a nail furnished with a head, in order that when they place them in their ears, they will be held by this kind of pivot. For these savages have much larger holes in their ears than our Frenchmen; the thumb could be passed through them, however large it might be. The savages also wear around the neck plates made of pieces of these shells, which are shaped in the same manner on stones, and which they form into round or oval pieces of about three or four inches in diameter. They are then pierced near the edge by means of fire and used as ornaments."

It is evident from this that they were worn in the ears; whether used in any other way is a mere surmise.

In the same quotation mention is made of the shell gorget, the most elegant of the shell ornaments. One type has already been noticed and figured (Fig. 18). This has engraved on it what appears, from the number of specimens bearing the same figure found in

different sections, to be a conventionalized representation of the rattlesnake, to which was probably attached some sacred, talismanic or superstitious signification. Shell gorgets are found with various other designs engraved upon them. Another somewhat common form is shown in Fig. 48. This form appears to have been confined to what is now middle Tennessee. A few have been discovered bearing designs which are strongly suggestive of Mexican or Central American origin; one of these from the Etowah mound, Georgia, is shown in Fig. 49. Another in-

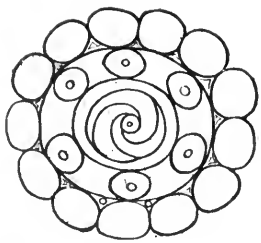

Fig. 48. Shell gorget, Tennessee.

Fig. 49. Shell gorget, Georgia.

teresting variety is that bearing the figure of a spider. The few specimens of the latter which have been discovered are mostly from southern Illinois and southeastern Missouri, one coming from eastern Tennessee.

Another class of shell ornaments represents more or less distinctly the human face. They are supposed to have been used as masks. These have been discovered in greatest abundance in the mounds of Tennessee, but their range is quite wide, examples having been reported from Kentucky, Virginia, Illinois, Missouri and Arkansas, and a somewhat different type from Alabama, Georgia and New York.

The class of shell articles found in greatest abundance is that including the various types of beads. The simplest form is the perforated small univalve, the species most commonly used being the *Marginella, Oliva*, and *Cyprea*. One of the most common varieties is the discoidal or button-shaped bead with a hole through the middle. The cylindrical form is also of frequent occurrence. Articles of this class appear to have been in use among the mound-builders of almost every part of the Atlantic division, however they are of most frequent occurrence in the middle and southern provinces. The extensive use of shell beads or "wampum" as currency among the Indians of the Atlantic coast is a well-known historic fact that requires no proof here. That this custom should have been brought about by Europeans at the early date it is known to have been in vogue, is simply impossible, as it is spoken of as a native custom by the first navigators who visited the continent. It is therefore a reasonable presumption that it had come down from prehistoric times.

Perforated fresh-water pearls have been found in large numbers in a few Ohio mounds, and specimens have been occasionally unearthed in other sections.

Textile fabrics.

That cloth was manufactured to a considerable extent by the mound-builders has now been demonstrated by incontestible evidence. It has been found in several instances attached to copper articles, around which it had been wrapped and by which it was preserved. Examples of this kind have been discovered in eastern Iowa, Illinois, Ohio and Georgia, and probably elsewhere. Cloth has also been found in caves of Kentucky, in some instances with mummified or desiccated bodies. A fine example was obtained by the Bureau of American Ethnology from a cave deposit of eastern Tennessee. Accompanying this was an almost complete mat, with the submarginal stripe quite distinct. The burial in this case was apparently comparatively recent, but the tissue of the cloth and the accompanying bone needles are precisely of the type of some of the mound articles. Remains of charred cloth have also been discovered in mounds. Mr. W. H. Holmes has clearly demonstrated that many of the designs on mound pottery have resulted from the pressure of cloth on the surface while the vessel was yet comparatively soft. Probably the vessels had been wrapped in cloth to keep them in shape. By taking impressions in clay from these he has been enabled to give various patterns of meshes and cord.

Matting was probably in common use among the mound-builders, but, like cloth, being subject to early

decay when buried in the soil, comparatively few specimens have been discovered. Reed matting was found in connection with the copper articles of the Etowah mound of Georgia, hereafter mentioned. A somewhat remarkable discovery was made by the agent of the Bureau of American Ethnology in an Arkansas mound. This was a layer of burnt matting three inches thick, lying immediately under a layer of burnt clay some six inches thick. This layer, for a considerable space, consisted entirely of burnt matting, through which were scattered parched or burnt grains of corn. The mound in which this discovery was made is a large one.

Copper articles.

Copper appears to have been used to a limited extent in almost every part of the mound division. Although it is probable that more articles of this class have been collected in Wisconsin than in any other district, it is doubtful whether this statement will apply to specimens obtained from mounds, excluding those pertaining to intrusive burials. Numbers have been discovered in mounds of Iowa, Illinois, and West Virginia; also in mounds and stone graves of Kentucky, Tennessee, North Carolina, and northern Georgia.

Implements of this class appear in considerable numbers among the archaeological collections of Canada, consisting chiefly of arrow-points, spear-heads, adzes, celts, and knife-blades. But copper ornaments appear to be comparatively rare in this section, and consist chiefly of beads. Some of the knife-blades bear such a strong resemblance to those of European

make as to lead to the conclusion that they are post-Columbian.

One of the most important finds of copper articles in an Ohio mound was that made by Mr. W. K. Moorehead in the Hopewell mound, Ross county. At the head of what appeared to be the principal personage buried here, were imitation elk-horns, neatly made of wood and covered with sheet copper rolled into cylindrical form over the prongs. These measured twenty-two inches in length, and were fitted to a copper cap or covering over the skull. This is certainly a unique specimen, as no other similar article has been found. However, wooden ear-ornaments overlaid with copper have been discovered in a stone grave in a mound of southern Illinois and in an Ohio mound, and Mr. Clarence B. Moore makes mention of them in his splendid work on the sand mounds of Florida. Copper-covered wooden spools were obtained by the Bureau of American Ethnology from the Holloway mound, eastern Georgia.

In addition to the gorgeous copper head-gear of the chief personage of the Hopewell tumulus, there were copper plates on the breast and stomach, also at the back. The copper had preserved the bones and a few of the sinews, also traces of cloth similar to coffee-sacking in texture. Copper spool-shaped objects and other articles were also found with this skeleton. It is worthy of notice in passing, that the skulls of this and of some other mounds of the group were of two types, the long-head (dolichocephalic) and short-head (brachycephalic) ; a fact also true of one of the tumuli of Caldwell county, North Carolina.

One of the most important and puzzling series of

copper articles found in the entire division is that obtained by the Bureau of American Ethnology from the Etowah group of Bartow county, Georgia.* These consist of thin, even plates of copper, with impressed figures, some of which remind us of Mexican designs (Fig. 50). Another was that of a bird of the same

Fig. 50. Figured copper plate, Georgia.

* This group is frequently referred to by writers as "on the farm of Col. Tumlin."

type as one discovered by Maj. J. W. Powell near Peoria, Illinois (Fig. 51). Other plates of the former type were discovered in a mound of Richmond county, Georgia; another, with dancing figures, in a stone grave of southern Illinois (Fig. 52). The skeleton of

Fig. 51. Figured copper plate, Illinois.

Fig. 52. Figured copper plate, Illinois.

the Etowah group, with which the plates were found, was in a box-shaped stone sepulcher, and indicated a man of almost giant stature, being seven feet long. The head rested on the copper plate shown in Fig. 50. This copper had been wrapped in buckskin, and around this had been wound cane matting.

Other types of copper articles found in mounds and ancient graves are celts, so-called axes, beads, disks, gorgets, spindles, ear-pendants, rings, bracelets, etc. The celts, axes, gorgets, spindles, some of the beads, and most of the bracelets, show very clearly that they have been beaten out of malleable copper with the

rude implements of the natives. But some of the beads, ear-pendants, and bracelets, and also some of the plates, are formed from sheet copper, as smooth and even as that of European manufacture.

There is little doubt that most of this copper, which was not introduced by Europeans, was obtained from the Lake Superior mines. Some was possibly obtained from drift copper. Nor is there any reason for attributing the mining or working of this copper to any other people than the Indians. Prof. R. L. Packard, an expert mining chemist, who is personally familiar with the mines of the Lake Superior region, and who has thoroughly studied all the facts bearing on the history of these mines, comes to the conclusion that the ancient work done in them was done by the native Indians. In fact, he shows by positive historical evidence that precisely such work as was done by the ancient workmen in the mines of Keweenaw Point, Ontonagon and Isle Royale has been done by Indians, but he warns us that the word "mining," as used in this connection, is not to be taken in its true and technical sense, as there is no evidence that more was done in prehistoric times than simply to expose the copper masses and beat off from these such particles as they could with their rude implements. In some cases they heated the mass by building a fire on it, and then suddenly cooled it by throwing cold water over it.

Articles of stone.

As it is not possible in this brief survey to mention all the types of the minor art products found in con-

nection with the antiquities of the mound-builder, only the typical and more important of this class will be alluded to, it being assumed that the reader is more or less familiar with the forms of the chipped stones.

The most important of the class are the human images, of which, however, but few have been discovered, and these are confined, geographically, to Georgia, Tennessee, and southern Illinois. One found by the side of a skeleton lying in a boat-shaped vessel of clay in a mound of eastern Tennessee is shown in

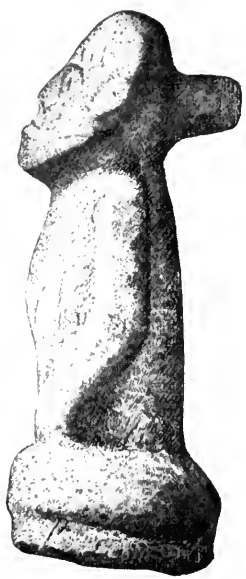

Fig. 53. Stone image, Tennessee.

Fig. 54. Stone image, Tennessee.

Fig. 53. Another was plowed up near the Etowah mounds representing a sitting female : it is of peculiar

interest as showing the same type and apparently one method of arranging the hair. Another similar, but male, image has recently been discovered in Tennessee, the lower parts of which are more perfectly worked out (Fig. 54). With the exception of one found in Union county, Illinois, and fragments of others obtained from the Etowah group, Georgia, the other examples are from middle Tennessee.

In most of these, the oblique or sloping face indicates a modeling after the artificially flattened head. Another noticeable fact is the strong similarity in facial type of a majority of the specimens. This is true of one found at Etowah, Georgia, four from middle Tennessee, one from Kentucky, and one found in southern Illinois. It is worthy of notice that, with one exception, the images found in the mound section have been obtained from the stone grave area.

Another class of stone articles supposed to have been used for ceremonial purposes, and to which the name "banner stones" has been applied, is represented by the types shown in Fig. 55. A series of

Fig. 55. Banner stones.

outline forms of the various types of arrow-heads of America, as prepared by Mr. Henry C. Mercer for the Columbian Exposition at Madrid, is shown in Fig. 56. Of these, Nos. 1–29 are from the United States; 30–34,

Nicaragua; 35–42, Uruguay; 43–48, Argentine Confederation; 49–50, Alaska; 51–53, Costa Rica; 54–58, Greenland; 59–64, U. S. of Colombia; 65–67, Alaska;

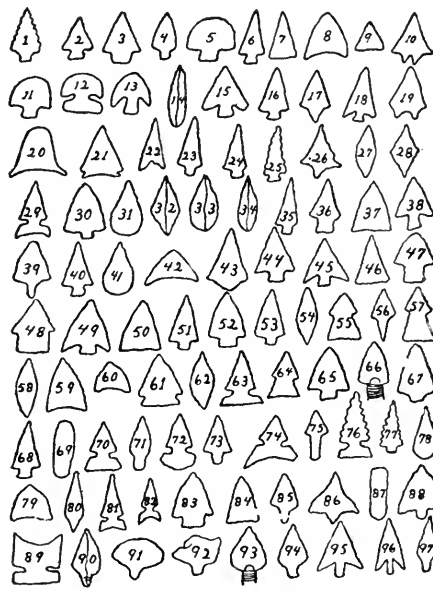

Fig. 56. Arrow heads.

68–92, Mexico; 93–94, Patagonia; and 95–97, Brazil. It is impossible, however, to present even a summary of the types of this class of articles in our allotted space.

CHAPTER IX.

INCLOSURES, PYRAMIDAL MOUNDS, ETC.

The monuments of this section which have attracted most attention are the pyramidal mounds and the inclosures, especially the latter, which in some instances embrace an area sufficient for a large sized native town or army camp. It is chiefly because of these works, which remind one of the pyramids of Egypt and fortifications of the old world, that the theory of a cultivated, mound-building race distinct from the Indian and now extinct, gained adherents. Nor is this to be wondered at when the size and extent of some of these works and the aversion of the lordly savage of modern times to physical labor are taken into consideration.

The pyramidal mounds, as heretofore stated, are confined almost exclusively to the southern section, few occurring north of the Ohio river. As already defined, these are usually quadrangular in form, either square or oblong, though a few circular ones in the form of a truncated cone have been found. Comparatively few, especially of the larger ones, have been thoroughly explored. Although some of those which have been examined are found to have been used as burial-places, yet, as a general rule, there are indications that they have been surmounted by one or more edifices of some kind. And this is apparently true of them even where used as depositories of the

dead. In some instances the remains of the upright wooden posts which formed the supports of the walls of the building are discovered; in others the evidence is found in the burnt clay with which the buildings were plastered, which has been frequently referred to by writers as "bricks." In some cases, only fire-beds and fragments of pottery have been found, but the experience of explorers has in most cases enabled them to decide that these were cooking places, hence in or near the dwelling or wigwam. This conclusion is supported by the historical evidence mentioned hereafter, that they were occupied in the Gulf States by the houses of the caciques and of the leading men, and by temples or council houses.

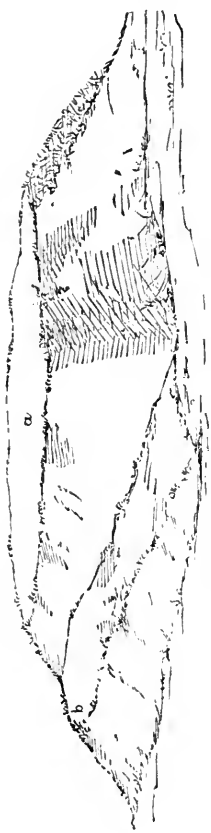

Fig. 57. Mound with graded way, Georgia.

The terraced mounds of this type are those having terraces, or apron-like extensions running out from one or two sides, sometimes equaling or exceeding in length and width the mound itself. Sometimes a graded way or inclined pathway runs up from a point some distance outside of the base to the upper level. In one or two instances this graded way is carried upward along one face (Fig. 57), but usually it is placed at right angles to one side. Mr. R. B. Evans, who made some explorations in Arkansas on

behalf of the Chicago Times, discovered a mound which, from his figure (Fig. 58), appears to have had a

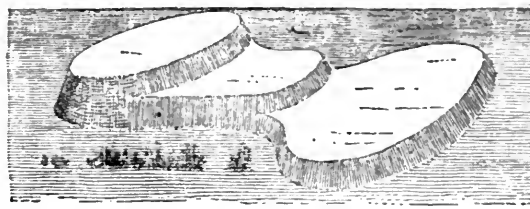

Fig. 58. Double-terraced mound, Arkansas.

double terrace or terrace in two steps. No pyramidal mound, however, of the typical form, that is with successive stages, has been discovered in this division.

Several instances occur where the main pyramidal structure is surmounted by a small conical tumulus. Examples of this type have been found in Indiana, south-eastern Missouri and Arkansas. The celebrated Selsertown mound of Adams county, Mississippi, of which frequent mention is made in works on archæology, appears to be an artificially-flattened natural elevation, the sides of which have been extended by additions to bring the contour to the desired form. This bears on its upper surface four conical mounds, one of which is of considerable size, being thirty-one feet in height. It is stated that seven other mounds of small size formerly existed on its surface, but a careful examination by the agents of the Bureau of American Ethnology led to the conclusion that these were slightly elevated house-sites which have been obliterated by the plow, as numerous fragments of burnt clay plastering (frequently spoken of as "bricks")

were found at the points they are said to have occupied. (Fig. 59.)

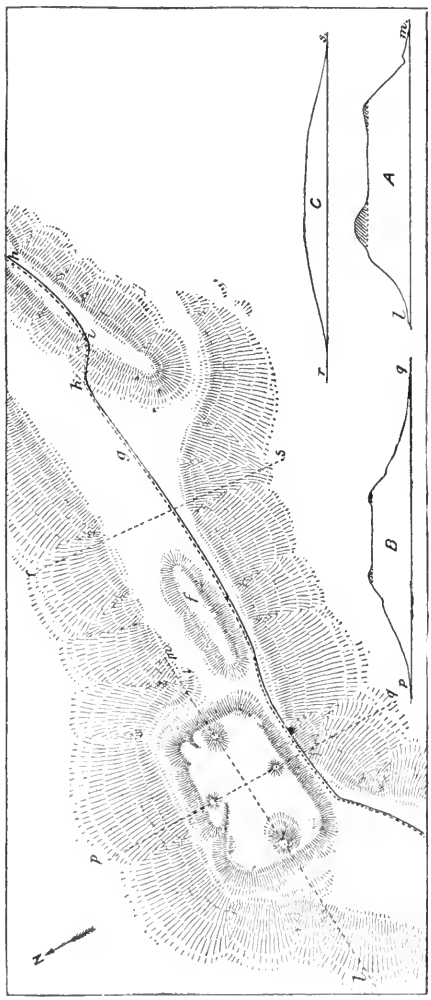

Fig. 59. Selsertown mound, Mississippi.

Inclosures and other Mural Works.

Under the term "Inclosures" are generally included not only those works consisting of completely surrounding walls of earth or stone, but also defensive and partially surrounding walls thrown across necks of land in the bends of rivers or shore lines of lakes, or built in the rear of projecting bluffs where the declivity forms a natural defense in the front and on the sides.

Although pyramidal mounds are seldom found elsewhere than on the rich level lands, inclosures have a much wider topographical range, occurring not only on the alluvial levels, but frequently forming defensive works on bluff headlands and elevated points, and here and there encircling the summit of an isolated hill. So apparent is it that the works of this class found on the elevated localities were built for defensive purposes, that the name "hill forts" has been applied to them.

As a general rule, inclosures are irregular in outline, the form being governed more or less by the topography or some local condition. There are necessarily few, if any, exceptions to this rule among the "hill forts," as the outlines of these are governed wholly by the topographical features; but of those on level areas, several of the Ohio works, and here and there one of the New York, Indiana, Michigan and Iowa inclosures present quite regular figures, a few of those in Ohio conforming with remarkable precision to true geometrical figures. The latter are circular, square and octagonal; one or two of those in Indiana are of the square or parallelogram form,

the others are circular, or polygonal. They vary in

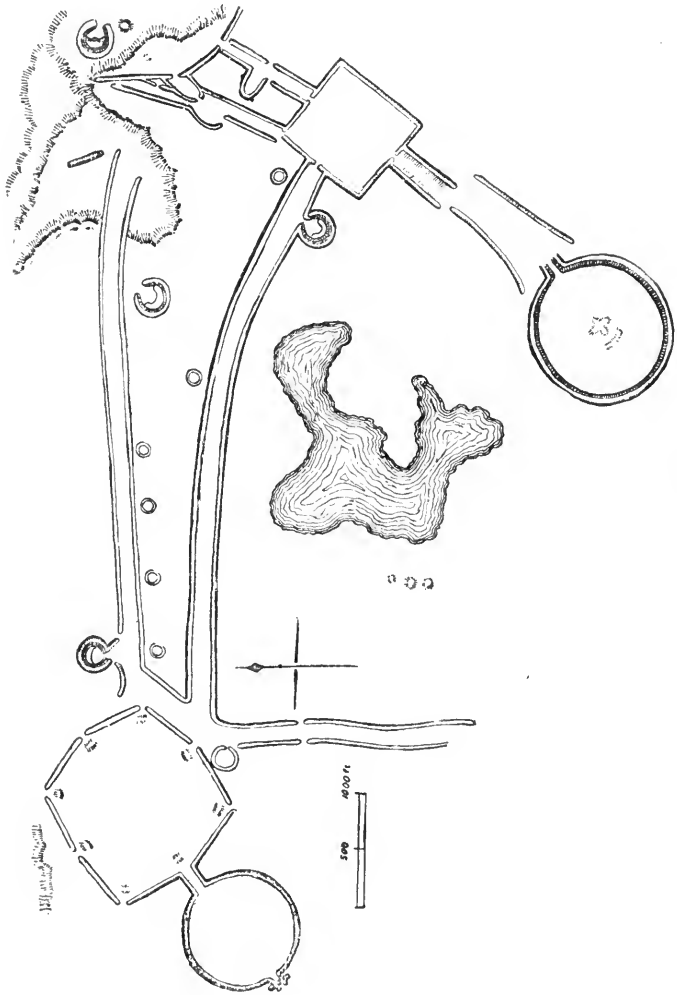

Fig. 60. Newark works, Ohio.

extent from an area of an acre or less to one hundred and fifty acres. In order that the reader may judge

for himself as to the approximation of some of the Ohio inclosures to true geometrical figures, the measurements of one taken under the direction of the author, are given here. This, known as the "Observatory Circle," of the great group near Newark, is yet very distinct, being about three feet high at the lowest point, the average height being some four or five feet.

The chords in this survey were 100 feet each; the stations were on top of the wall as near the middle line as could be ascertained by measurement and judgment, and the stakes all set before the bearings were taken. The field notes are as follows, beginning at station 0 in the middle of the gateway leading to the octagon (Fig. 60):

Station.	Bearing.	Distance.	Width of wall.	Remarks.
	° ′	*Feet.*	*Feet.*	
0 to 1..	S. 38 20 E..	42	0	Station 1 at junction of circle and south parallel.
1 to 2..	S. 26 20 E..	100	36	
2 to 3..	S. 17 37 E..	100	35	
3 to 4..	S. 6 00 E..	100	38	
4 to 5..	S. 5 36 W..	100	38	
5 to 6..	S. 15 00 W..	100	37	
6 to 7..	S. 27 45 W..	100	36	Center of wall 2 feet east; that is, outward.
7 to 8..	S. 35 17 W..	100	34	
8 to 9..	S. 48 40 W..	100	37	
9 to 10..	S. 58 16 W..	100	37	
10 to 11..	S. 69 13 W..	100	37	
11 to 12..	S. 82 00 W..	100	35	
12 to 13..	N. 89 13 W..	100	41	
13 to 14..	N. 76 23 W..	100	37	
14 to 15..	N. 66 15 W..	100	38 (?)	Width estimated, not measured.
15 to 16..	N. 55 56 W..	100	39	
16 to 17..	N. 45 10 W..	100	.....	"Observatory."
17 to 18..	N. 33 33 W..	100	39	
18 to 19..	N. 20 29 W..	100	42	
19 to 20..	N. 11 22 W..	100	43	
20 to 21..	N. 1 34 W..	100	40	
21 to 22..	N. 9 06 E..	100	39	
22 to 23..	N. 20 54 E..	100	38	

Station.	Bearing.	Distance.	Width of wall.	Remarks.
	° ′	*Feet.*	*Feet.*	
23 to 24..	N. 31 12 E..	100	39	
24 to 25..	N. 42 32 E..	100	40	
25 to 26..	N. 53 43 E..	100	42	
26 to 27..	N. 62 43 E..	100	40	
27 to 28..	N. 75 07 E..	100	44	
28 to 29..	N. 86 23 E..	100	40	
29 to 30..	S. 82 17 E..	100	44	
30 to 31..	S. 72 04 E..	100	42	
31 to 32..	S. 60 45 E..	100	45	
32 to 33..	S. 51 06 E..	100	45	
33 to 34..	S. 46 29 E..	20	.....	Junction with N. para'l wall.
34 to 0..	S. 38 20 E..	42	.....	Middle of gateway.
34 to 36..	N. 52 04 E..	295	.....	North parallel.
1 to 37..	N. 51 53 E..	293	.....	South parallel.
	Check Lines.			
0 to 11..	S. 18 28 W..	883	.....	
0 to 17..	S. 51 27 W..	1057	.....	
0 to ½..	S. 52 00 W..	.....	.....	"½" indicates the half-way point in the circumference.
0 to 25..	N. 85 10 W..	770	.....	
17 to 11..	S. 71 59 E..	570	.....	
17 to 25..	N. 4 23 E..	728	.....	
25 to 11..	S. 28 03 E..	1024	.....	

In order to bring before the eye of the reader the approximate regularity of this circular work, let him make a plat to a scale, with a line of short chords indicating the line of the survey along the top of the wall, and then draw the nearest approximate circle thereto. Great care was taken in making the survey, and the plat and calculation were found to confirm the accuracy claimed.

Measuring the various diameters, the maximum is found to be 1,059 feet, and the minimum 1,050, the mean of which is 1,054.5 feet, but it is found by trial that the nearest approximate circle has a diameter of 1,054 feet. The widest divergence between the line

of survey and the circumference of the true circle is 4 feet.

The aggregate length of the chords surveyed is 3,304 feet, while the circumference of the approximate circle is 3,311 feet; adding to the sum of the chords the additional length of the ares they subtend (0.1508 of a foot to each 100-foot chord), and we have a total of 3,309 feet. It is therefore evident that the inclosure approaches in form very nearly an absolute circle.

What means the native authors of this work used to obtain results so near geometrical correctness in a circle of this size is not known, but it was probably with a cord or rope, which people who could manufacture cloth could certainly make. The survey of the square in the same group shows the angles at the four corners to have been respectively 90° 51′, 89° 40′, 90° 26′, and 89° 03′, each being within less than a degree of correct. The sides were found to be respectively 928, 926, 939, and 951 feet in length.

The most extensive example of the "hill forts" is that known as Fort Ancient, in Warren county, Ohio. This crowns a spur of the bluff some two hundred and fifty or three hundred feet high, which here overhangs the Miami river. The area embraced is only some seventy-five or eighty acres, but the length of the wall, which follows all the windings and zigzags of the margin of the bluff and of the side ravines, is a little over three miles and a half. This is one of the best preserved monuments of the Ohio valley, the surrounding wall being uninjured save at points where the turnpike cuts through it, and at a few places where ravines have been formed since it was

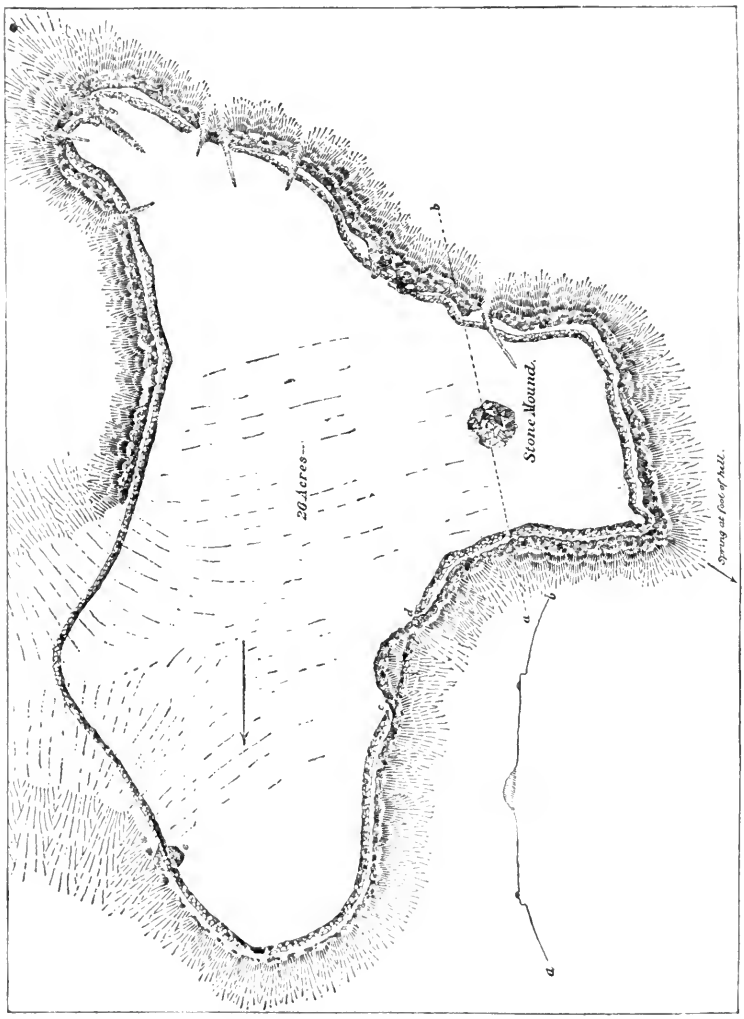

Fig. 61. Hill fort, Ohio.

abandoned. This wall, which is partly of stone, but chiefly of dirt thrown up from the inner or upper side, varies in height from three or four to nineteen feet, and from twenty-five to seventy feet in width at base. As the earth has all been taken from the inside (except along the high wall which crosses the level at the rear), and thrown outward on the crest of the slope, this has left an inside ditch. As a rule the wall is strongest and highest at the points of easiest approach; and, at some places, the outside slope has been artificially steepened, proving beyond any reasonable doubt that the work was one of defense.

The great length of the wall has led to the supposition that this is the crowning achievement of the mound-builders, but a little calculation and thought will show this to be an error. Assuming the average width to be forty feet and average height ten feet—which, as the writer knows from personal observation, is in excess of the true average—the solid contents of the placed material is found to be about 139,000 cubic yards. This falls short of the Etowah mound, in Georgia, about 20,000 cubic yards, and is less than one-third the contents of the great Cahokia mound, near East St. Louis, Illinois. When we take into consideration the fact that the earth of the mound had to be borne some distance, while that of the wall (with the exception, perhaps, of the rear wall across the level neck) had only to be thrown up from the ditch, it is apparent that the building of the latter involved much less labor than the mound.

One of the "hill forts," situated in Perry county, Ohio, is shown in Fig. 61. The wall in this case is built of rough stones, laid up without order, and in

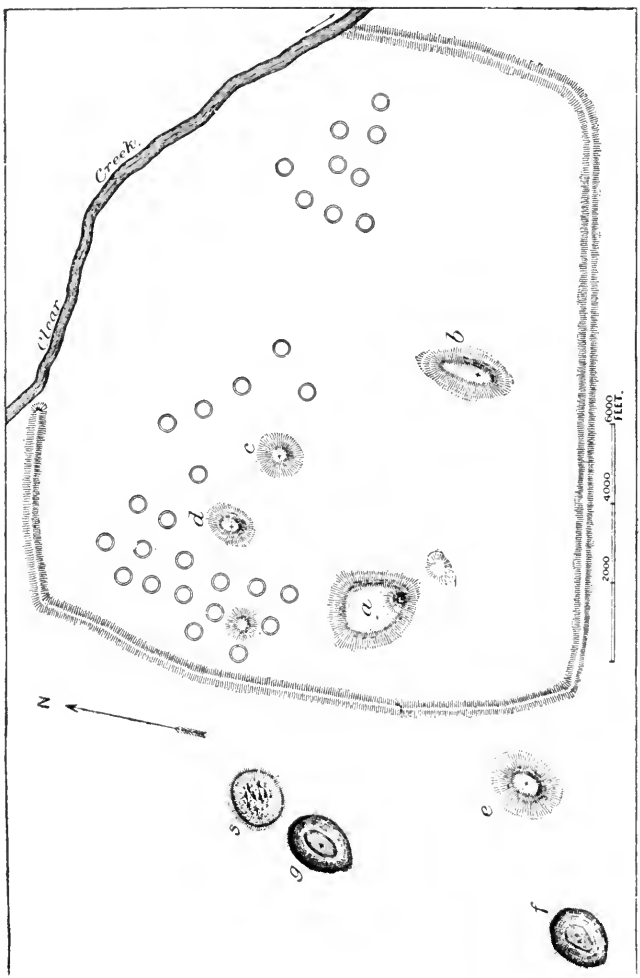

Fig. 62. Linn works, Illinois.

its present partially obliterated condition, varies in height from mere traces at one point to five or six feet. The entire length, following all the curves, is 6,610 feet.

The celebrated and often-figured works at Newark, Ohio, form, perhaps, the most elaborate group of this class known to the Atlantic division. The size of our page will permit of but a partial representation of this truly remarkable antiquity. (Fig. 60.) Fortunately for science, a complete survey and accurate drawing of this group was made by Col. Whittlesey before it had been encroached upon by the spread of the city. The reader can form some idea of the extent from the fact that the length from the eastern to the western extremity is about two miles; the diameter of the western circle is 1,050 feet; of the octagon, about 1,500 feet; and that the fair-grounds of the Licking County Agricultural Association are embraced in the circle at the south-east.

An example from Union county, Illinois, inclosing mounds and hut-rings, and including an area of twenty-eight acres, is shown in Fig. 62. This was evidently an inclosed village, and is a type of others which occur in middle Tennessee and south-eastern Missouri.

Our limited space will permit us to refer to only one other type, which apparently includes the well-known work at Aztalan, Wisconsin, so well described by Dr. Lapham in his work on the antiquities of that state. An example of this type, located in Vanderburg county, Indiana, is shown in Fig. 63. At somewhat regular distances along the surrounding wall are

buttress-like enlargements, projecting outward from twenty to thirty feet. The distance between these projections varies, increasing from east to west. Two

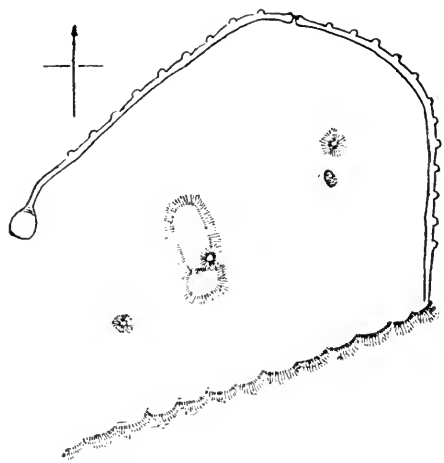

Fig. 63. Angel mounds, Indiana.

measured on the east (from center to center) were ninety-seven feet apart; two on the north, one hundred and seven; and two on the west, one hundred and twenty. The included, oblong tumulus is of the pyramidal type, with terrace, flat on top, and of comparatively large size. This is somewhat peculiar, though not unique, in being capped at one corner by a small conical mound. The large mound in the Union county (Illinois) group (Fig. 62), and a mound in one of the Paint creek (Ohio) groups, are also capped in the same way—that is, at one corner.

Another inclosure of this type occurs in Hardin county, Tennessee, near Savannah, which seems to have a double bastioned wall, or rather two walls.

However, as only traces of the outer wall are seen, it is possible there was an older and a newer one. Although these may have been developed by different processes—that of Aztalan from the chain-mound series, those of Indiana and Tennessee from a custom of placing towers or bastions at intervals along the wall—yet the strong similarity of the examples is evident. It may be stated as possibly suggestive that the Aztalan fort is in the Siouan country, and that the Quapaws, who pertain to the same stock, and whom De Soto encountered in Arkansas, are said to have dwelt in former times on the lower Ohio river, possibly in the vicinity of the group in Vanderburg county, Indiana.

Were all these inclosures built for defensive purposes? Are they the walls which the ancient people placed about their villages to protect them against the sudden attacks of inveterate foes? Such a question would seem superfluous but for the fact that Messrs. Squier and Davis assume, in their classic work on the "Ancient Monuments of the Mississippi Valley," that those works on the level areas of Ohio which are accompanied by no ditch, or which have an interior ditch, are sacred inclosures; that they were built for religious or ceremonial purposes. Although this view has been accepted by numerous authors, it does not appear to be founded on any valid reason. The more reasonable conclusion which is generally accepted at the present day is, that they have been fortified villages. Lewis H. Morgan suggested that where the square and circle were combined, the former surrounded the village, while the latter, which is often without a trench, was a substitute for a fence about the garden

in which the villagers cultivated their maize, beans, squashes, and tobacco. It is not probable that a people having the skill to plan and construct the elaborate works of the level areas, and the forethought to build forts on the neighboring hills as places of retreat, would have left their villages unprotected. The ancient works throughout this region indicate a long and bitter contest between hostile tribes, which ultimately resulted in the expulsion of the builders.

Hut-rings and House-sites.

Although groups of mounds marking the sites of ancient villages scattered over the Mississippi valley and Gulf States may be numbered by hundreds and even thousands, yet in none of all these is there a single house, a single dwelling or a single temple remaining from which we may learn the architecture of the ancient inhabitants. That the mound-builders lived in houses must be assumed; the inference is therefore irresistible that their dwellings were constructed of perishable materials, as structures of brick or stone could not have entirely vanished. Nevertheless, the monuments furnish some data which, by comparison with known Indian habits and customs, enable us to form some idea of their buildings.

At various points of the mound area, especially in Tennessee, Illinois and south-eastern Missouri, the sites of thousands of them are marked by small rings or circles of earth from fifteen to fifty feet in diameter, the inclosed area being more or less depressed. So apparent is it to explorers that these are the remains of circular houses or wigwams that the name "hut-rings" is generally applied to them. The in-

terior area of a number of inclosures in the section named is occupied chiefly by these remains. It appears, also, from a statement made by Squier and Davis, that they were not uncommon in the Ohio groups, but the plow has so wholly obliterated them that few, if any, traces remain at the present day. It is possible that some of these were the remains of the wigwams of Indians who occupied these sites in comparatively modern times. Such evidences of subsequent occupancy have been observed in some of the groups of south-eastern Missouri. Even the graded way to the great mound of the Rich Woods group has two or three of these rings on its surface. These remains give the shape and size of one class of dwellings in the sections named. Excavations in the center usually bring to light the ashes and hearth that mark the place where the fire was built, and occasionally unearth fragments of the vessels used in cooking, the bones of animals on whose flesh the inmates fed, and other articles pertaining to domestic use.

There is, however, conclusive evidence that in one section, at least, the mound-builders constructed another and more advanced type of houses. Mention has already been incidentally made of the so-called "house-sites" of Arkansas; nevertheless, the following passage of the 12th Annual Report of the Bureau of American Ethnology relating to this subject may be appropriately quoted here:

"During the progress of explorations by assistants of the Bureau of American Ethnology in south-east Missouri, Arkansas and Mississippi, especially in Arkansas, in numerous instances, probably hundreds, beds of hard, burned clay, containing impressions of

grass and cane, were observed. These were generally found one or two feet below the surface of low, flat mounds, from one to five feet high, and from fifteen to fifty feet in diameter, though by no means confined to tumuli of this character, as they were also observed near the surface of the large, flat-topped and conical mounds. So common were these burnt clay beds in

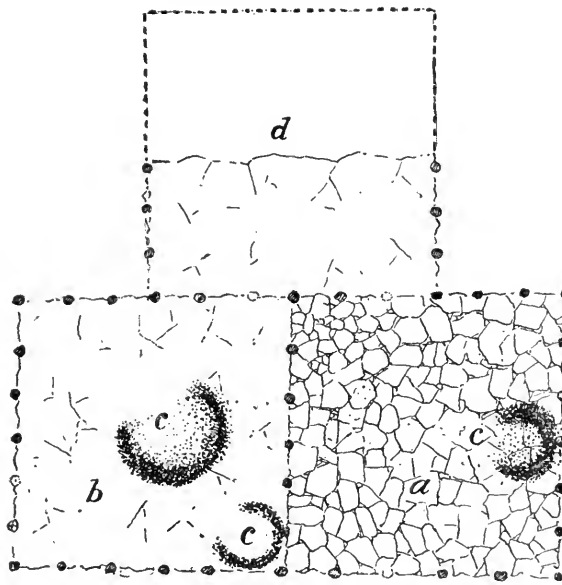

Fig. 64. House site, Arkansas.

the low, flat mounds and so evidently the remains of former houses, that the explorers generally speak of them in their reports as 'house-sites.'

"As a general rule, in opening them, the strata are found to occur in this order: first, a top layer of soil from one to two feet thick; then a layer of burnt clay from four inches to a foot thick (though usually vary-

ing from four to eight inches), which formed the plastering of the walls. This was always broken into lumps, never in a uniform unbroken layer, showing that it had fallen, and was not originally placed where found; immediately below this is a thin layer of hardened muck or dark clay, though this does not always seem to be distinct. At this depth, in the mounds of the eastern part of Arkansas, are usually found one and sometimes two skeletons."

That the explorers were justified in their conclusion is proven by the fact that in two instances the remains were sufficiently evident to enable them to trace the outlines of the buildings. In both cases these consisted of three square rooms (Fig. 64).

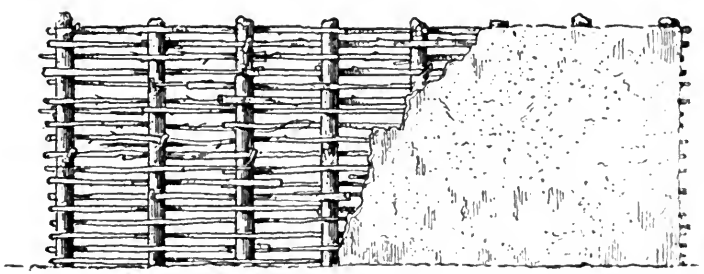

Fig. 65. Supposed method of lathing houses.

Judging by the burnt fragments of the walls found in one instance, it is presumed that cane lathing was used and was worked in between the posts as shown in Fig. 65. Prof. Swallow describes a room he found in one of the mounds of south-eastern Missouri as formed by poles, lathed with split cane and plastered with clay both inside and out.

It is only necessary to quote DuPratz's description of the Indian square houses of this section, to show

how exactly they agree with what has been revealed by the mounds:

"The cabins of the natives are all perfectly square; none of them are less than fifteen feet in extent in every direction, but there are some which are more than thirty. The following is their manner of building them: The natives go into the new forest to seek the trunks of young walnut trees of four inches in diameter and from eighteen to twenty feet long; they plant the largest ones at four corners to form the breadth and the dome; but before fixing the others they prepare the scaffolding; it consists of four poles fastened together at the top, the lower ends corresponding to the four corners; on these four poles others are fastened crosswise at a distance of a foot apart; this makes a ladder with four sides, or four ladders joined together. This done, they fix the other poles in the ground in a straight line between those of the corners; when they are thus planted they are lightly bound to a pole which crosses them on the inside of each side (of the house). For this purpose large splints of stalks are used to tie them, at the height of five or six feet, according to the size of the cabin, which forms the walls; these upright poles are not more than about fifteen inches apart from each other; a young man then mounts to the end of one of the corner poles with a cord in his teeth, fastens the cord to the pole, and as he mounts within, the pole bends because those who are below draw the cord to bend the pole as much as is necessary; at the same time another young man fixes the pole of the opposite corner in the same way; the two poles being thus bent at a suitable height, they are fastened strongly and

evenly. The same is done with the poles of the other two corners as they are joined at the point, which make altogether the figure of a bower or a summer house, such as we have in France. After this work they fasten sticks on the lower sides or walls at a distance of about eight inches across, as high as the pole of which I have spoken, which forms the length of the wall.

"These sticks being thus fastened, they make mud walls of clay, in which they put a sufficient amount of Spanish moss. These walls are not more than four inches thick. They leave no opening but the door, which is only two feet in width by four in height. There are some much smaller. They then cover the framework, which I have just described, with mats of reeds, putting the smoothest on the inside of the cabin, taking care to fasten them together so that they are well joined. After this they make large bundles of grass of the tallest that can be found in the low lands, and which is four or five feet long; this is put on in the same way as straw, which is used to cover thatched houses. The grass is fastened with large canes and splints also of canes. When the cabin is covered with grass they cover all with a matting of canes well bound together, and at the bottom they make a ring of 'bind-weeds' (lianes) all around the cabin; then they turn the grass evenly, and with this defense, however great the wind may be, it can do nothing against the cabin. These coverings last twenty years without being repaired."

CHAPTER X.

THE ANTIQUITY AND AUTHORS OF THE MOUNDS.

This is not the place for nor will our space permit the lengthy discussion of disputed points; nevertheless, our work, though designedly brief, would be incomplete without some notes in regard to the age and authors of the mounds. The opinion has already been expressed that these monuments are to be attributed to the Indians, meaning thereby the natives found inhabiting this division at the time of its discovery or their direct ancestors. A few facts bearing on the age of some of the tumuli have also been incidentally noticed. There are, however, certain considerations which it would seem, reasoning *a priori*, should lead to the conclusion that the Indians were the authors of these works.

First, there is the undoubted fact that these aborigines were in possession of the entire country of the mound-builders at the time of its discovery by Europeans. It is therefore a reasonable assumption that they had maintained possession of it from its first occupancy by them up to the coming of the whites. However, this does not necessarily forbid the supposition that they displaced a preceding race. That their entry could not have been very recent is inferred from two or three facts which must be recognized in the discussion of this subject.

One of these is the distinction already mentioned

between the types of the Pacific division and the Atlantic division. This distinction, which pertains to the archaeologic, linguistic and ethnic types, is too well marked to be overlooked. The lines also of the linguistic map prepared by the Bureau of American Ethnology conform in a remarkable degree to this division. The Athapascans overlap at the north and the Shoshones to a slight extent at the south, but both are essentially Pacific, notwithstanding the opinion of some authors to the contrary. This distinction between the two divisions, which has been recognized and made the basis in grouping by other writers, presents a formidable objection to the theory that the mound-builders had any connection with people of the Pacific division, or tends at least to the conclusion that the two groups were formed separately, or diverged at a very distant date in the past.

A second fact bearing in the same direction is the distribution of stocks and tribes in the Atlantic division. As a general rule, most of the members of each of the different stocks were found in contact or in close geographical relation with one another. It is most likely that the formation of tribal groups had begun before entry into the temperate portion of the division, but the complete establishment of these distinctions was after entry. This of necessity required many centuries, and presents another serious objection to the supposition that the Indians were not the mound-builders. True, it may be said, that the Indian hosts as they entered the area drove out the former inhabitants; but the very distant date to which this supposition refers the

mound-building era is not justified by the works or any other known data. Moreover, the objection to this theory becomes apparently insurmountable when it is shown that mound-building was beyond question continued, at least to some extent, into post-European times.

The proof of the last statement is found in both historical and monumental evidence. The chroniclers of De Soto's strange and unfortunate expedition through the Gulf States in 1540–2, whose statements could not have been warped by any preconceived opinions in regard to the authorship of these works, speak so positively as to the building and use thereof by the Indians as to leave no doubt that the custom of building and using mounds had not been abandoned at that date in the sections through which the expedition passed. They not only make repeated allusions to them, but state expressly that they were built and used by the Indians. Take for example the following:

"The Indians try to place their villages on elevated sites; but, inasmuch as in Florida there are not many sites of this kind where they can conveniently build, they erect elevations themselves in the following manner: They select the spot and carry there a quantity of earth, which they form into a kind of platform two or three pikes in height, the summit of which is large enough to give room for twelve, fifteen, or twenty houses, to lodge the cacique and his attendants. At the foot of this elevation they mark out a square place, according to the size of the village, around which the leading men have their houses. . . . To ascend the elevation they have a straight passageway

from bottom to top, fifteen or twenty feet wide. Here steps are made by massive beams, and others are planted firmly in the ground to serve as walls. On all other sides of the platform the sides are cut steep."

This not only mentions the form by speaking of the work as a "platform two or three pikes high" (about 24 to 40 feet), but states positively that the Indians built them, and indicates the purpose for which they were erected.

Another one of the chroniclers says: "The caciques of this country make a custom of raising near their dwellings very high hills, on which they sometimes build their houses." Here mound-building is expressly alluded to as a "custom." The other of the three chroniclers, speaking of the town of Ucita, in Florida, says: "The lord's (cacique's) house stood near the beach on a very high mound made by hand, for strength."

As two of these three chroniclers accompanied the expedition, and the other received his information from the survivors and manuscript accounts by participants, which manuscripts are now lost, there is no reason to question their correctness, especially as earthworks like those described are found in the region through which the expedition must have passed.

As allusion is made by these writers to works in Florida, Georgia, Alabama, Mississippi, and Arkansas, it is evident that the custom of building mounds prevailed throughout the Gulf States in 1540; nor had it ceased one hundred and thirty years later, when the French descended the Mississippi and took possession

of the territory bordering its southern course, as these hardy pioneers more than once allude to these works as built by the Indians. Nor do these writers refer to mounds only, as they describe the fortifications which encircled the native villages, both walls and moats, constructions which, under the corroding effect of time and the elements, would leave precisely such works as are now found in several places in that section.

As the larger and more important monuments of the entire southern section are attributed by this direct and positive historical evidence to the Indians, it is reasonable to suppose that all the prehistoric works of that section are attributable to the same race, unless some be found which bear unmistakable marks of a different culture. Such exceptions can apply, if at all, only to the few copper plates and engraved shells bearing figures having a resemblance to Mexican types, and then to the figures alone.

The monuments also furnish some decisive testimony on the same line. Articles of European make or derivation have been found in a number of tumuli where their presence could not be attributed to intrusive burial.

Hawk's-bells have been found in a Georgia and a Tennessee mound; iron articles (not meteoric) in a Georgia, North Carolina, Tennessee, and Ohio mound; and other articles of European manufacture have been found in several other mounds, both of the northern and southern sections. As allusion is made here only to articles which were not connected with intrusive burials, it is apparent that the mounds in which they were found belong to the post-European

era, and furnish additional evidence that the custom of building mounds had not ceased at the time of the discovery of America. As it is a fair and apparently unavoidable inference that the Indians had long been the sole occupants of the division at the time of the discovery, and it is proven that the custom of building mounds had not ceased at that time, the only reasonable conclusion is that the Indians were the authors of all these works. The supposition that there was a break in, and recommencement of, this custom, is wholly gratuitous, and based on neither valid evidence nor sound reasoning. Nor is the theory that, while some of the monuments are due to the Indians, others are to be ascribed to a different race, justified by the data, or reasonable, as no one is able to define the characters which distinguish the classes. If the Indians built mounds of the most advanced type and of large size, as history shows positively the natives of the Gulf States did, there is no necessity for attributing the works of the middle and northern sections to a different race. That the mound-builders were divided into various and often contending tribes, is shown by the works for defense and protection, as also by the evidences of varying customs. Yet there is nothing in the antiquities to indicate a higher culture than that of the southern Indians, or a greater difference between the people of the different sections than existed among the natives when first encountered by the whites.

If we compare the customs of the mound-builders, so far as shown by their works, and their artefacts, with those of the Indians, as done by Major Powell, we reach the same conclusion as that set forth above. As

there is no historical or other evidence, unless derived from the antiquities themselves, that any other race than the Indians ever occupied this region, or any part of it, previous to its discovery by the Europeans at the close of the fifteenth century, we enter the discussion with the presumption in favor of the view that they were the authors of the monuments. Every fact, therefore, ascertained by an examination of these works, which indicates a similarity between the mound-builders and Indians in customs, arts, religious beliefs, or modes of life, is an argument in favor of the theory of an Indian origin.

It was a custom among the mound-builders, at least in several localities, to remove the flesh of the dead before depositing them in their final resting places. That a similar custom prevailed among a number of Indian tribes, is well known to all students of native habits and customs. Burial beneath, or in dwellings was practiced in some sections by both mound-builders and Indians. Burial in a sitting or squatting position was by no means uncommon among the former, and that the same custom was followed by some tribes of the latter, is attested by La Hontan, Bossu, Lawson, Bartram, Adair and other writers. The use of fire, to some extent in the burial ceremonies of both is proven by the mounds and history. Certain tribes of both races buried their dead in box-shaped stone sepulchers. Shell gorgets, with figures engraved thereon were in use among both. It was not an unusual custom with several tribes of Indians to place bark beneath, and often above, the bodies of the dead. Numerous evidences of a similar mode of burial have been found in the mounds. Ac-

cording to Lawson, it was not uncommon among the Carolina tribes to wrap the body of the dead in mats made of rushes or cane. Portions of rush or cane matting have frequently been found about human remains in southern tumuli. The mound-builders of the middle zone, from eastern Iowa to West Virginia, made use of stone pipes of a peculiar form known as the "monitor" type. Adair, about the middle of the last century, described one kind of pipe made by the Cherokees precisely of this peculiar type. As he was totally unaware of what was hidden in the mounds of Ohio or Iowa, his description must have been made from what he saw. And thus we might go on, showing link after link binding together the mound-builders and Indians, making the ties so numerous and strong as to leave no plausible basis for any other theory.

Having given this brief and incomplete outline of the reasons for believing the authors of these ancient works were none other than the Indians found inhabiting this division at its discovery by Europeans, and their immediate ancestors, we will state briefly some of the conclusions which appear to be legitimately drawn from the archaeological data which have so far been obtained, and from other corroborating evidence.

Neither the microscopic study of a landscape nor a minute analysis of its parts will give us a true conception of its beauty or grandeur or its general appearance; it is only when we look upon it as a whole that this is clearly perceived. So it is with some things in all branches of science and thought, and so

it is to some degree with one aspect of the archaeological features of the Atlantic division of our continent, and possibly of the entire continent. Compared in the aggregate with the archaeology of Mesopotamia or Egypt, the contrast in age is too apparent to be misunderstood. While the latter bear the marks of hoary age impressed by the weight of milleniums, the others seem in comparison the relics of but three or four centuries past.

Compare the excavations necessary to uncover the remains of Egypt, Assyria, Troy and Mycenia with those necessary to reveal the deepest remains of the mound-builders, and the latter seem almost child's play in contrast with the others. In other words, there is nothing in the general aspect of the archaeology of this region to indicate the evident antiquity of some of the Old World sites. So far as the general trend of monumental evidence goes, it is decidedly in the direction that man's appearance in this region is recent as compared with the length of time he has inhabited some of the Old World sections.

The theory of a race preceding the Indians is as yet but mere conjecture, which must be put aside until more substantial proofs can be adduced than any which have so far been presented. Mr. Mercer's examinations of the cave deposits have failed to give even the slightest support to this theory. It is possible and not even improbable that the Eskimo in prehistoric times had pushed their way southward along the Atlantic coast as far as the mouth of the Hudson. But no one at the present day, who has made a study of these people, claims a more southern origin for them than what has been already mentioned.

CHAPTER XI.

DURATION OF THE MOUND-BUILDING AGE.

It is not possible for us, with the data which have so far been obtained, to fix with any approximate certainty the date when the Indians first appeared upon the scene. That we must go back a thousand years preceding the discovery by Columbus may be safely assumed, and that thrice that number is not sufficient will be claimed by many. If the supposition that the tribes of the various stocks were differentiated after their entrance into the division be accepted, the linguist will require time for the formation of these tongues, nor will he be content, even supposing the stocks had been formed before entry, with an allowance for the development of the Algonquian and Iroquoian dialects of less than two or three thousand years. Unfortunately, however, for archaeology, neither linguists nor geologists have as yet succeeded in reducing their chronological periods to years in such a manner as to be generally satisfactory to scientists. With their own appropriate units of measurement the scales they form are no doubt valuable and can be used as a basis in other investigations; but the attempts to put them into years have, as yet, shown such wide divergence as to render them practically unavailable to students in other branches. The student of archaeology is therefore advised to rely chiefly upon his own scale based on the testimony of the monuments, as less liable to lead him astray.

Although the time and the manner of the first entry of the Indians into this region are questions which we are unable to answer satisfactorily, we are not so wholly at sea in regard to the age of its oldest monuments—or in other words, as to the period of time embraced in the mound-building age. That this age did not end until post-European times, has been shown. That its commencement does not reach back into hoary antiquity appears to be legitimately inferred from several facts, of which only two or three can be noticed here, and that but briefly.

The supposition that the animal or effigy mounds of the Wisconsin district belong to a different era than the other classes is negatived by abundant evidence, which will be found in the author's Report on Mound Explorations in the 12th Annual Report of the Bureau of American Ethnology. It may be stated here, however, that the effigies are so closely linked with the other mounds of the same district as to forbid the idea that they pertain to different races or different eras. As Dr. Lapham has well contended, the evidence seems indisputable that mound-building in that section was not discontinued until the incoming of the white race. It may also be further stated that there is indisputable evidence that the custom of forming effigies on the surface of the earth continued far into post-European times. This survival is found in certain animal, human and other figures outlined with granite bowlders (occasionally with buffalo bones) upon the surface of the ground, usually on elevated positions and sometimes upon the summits of the highest buttes. (Fig. 66.) These are found chiefly in the Dakotas, but Mr. T. H. Lewis, who has

explored somewhat carefully this north-western section, says they are found in western Iowa and Nebraska, and northward to Manitoba, and from western Minnesota to Montana. They are probably Siouan.

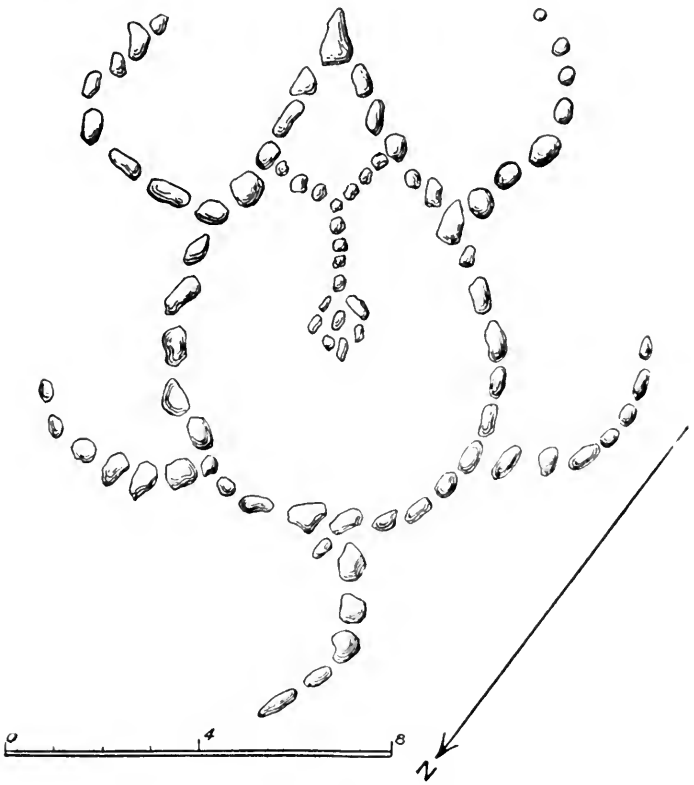

Fig. 66. Surface effigy, South Dakota.

The mound-building age must therefore be considered one and unbroken. It is probable that the more elaborate works, the pyramids, the large inclosures, and true effigies, form the most ancient types. Be

this as it may, one certain and necessary sign of long-continued occupancy is wanting in every part of the division. This is that stratification, indicating successive waves of population, changes in culture, and other signs of passing ages and alternate times of building up and of destroying, which is wholly wanting in the monuments of the division, or is limited to the evidences in a few instances of subsequent temporary occupancy of certain groups of works. What the caves may reveal when thoroughly explored is unknown, but so far as they have been examined there is nothing which seems to bear against this conclusion. The cave explorations by Mr. Mercer, which have been carefully and intelligently carried on, have furnished no indications of a paleolithic people or any other race than the Indians. If mound-building had been carried on for thousands of years it may be assumed as certain that some of the favored localities of the prehistoric inhabitants would show different horizons of ancient works, or at least of the relics and remains which had been deposited therein, and the depth of the accumulation would be much greater than it is found to be.

There are mounds which present some evidence of having been built up by successive additions at different dates; others which bear the marks of repeated occupancy; and others which show two or more series of burials with greater or less intervals. There are indications in some sections of successive waves of population; but throughout all we find evidences of the same culture, like customs, like beliefs and indications of the same racial traits. Even the evidence furnished by the shell mounds and kitchen-middens is

substantially the same as that of the other monuments. There is nothing to vary the conclusion that the Indians were the authors of all these works. There are no evidences of greater changes than would result from the outgoing of one tribe and the incoming of another. There are no indications of any great advance in culture from the beginning to the end.

Nadaillac, who, at the time he wrote his "Prehistoric America," was inclined to attribute the mounds of the region now under consideration to some other people than the ancestors of the Indians found inhabiting it, remarks as follows in regard to the length of the mound-building age:

"From the mounds themselves we can learn nothing. A lapse of thirty centuries or of five would account equally well for the development of the civilization they represent. Stronck ascribes the erection of some of the mounds to the earliest days of our own era, and thinks that some of them must have been abandoned between the sixth and twelfth centuries. The margin, it is evident, is wide. Force, in fixing on the seventh century as the most flourishing period of these people, and Hellwald, in making them contemporary with Charlemagne, would appear to indorse to some extent the hypothesis of Stronck. Short, in an excellent work on the North American Indians, tells us that one or at the most two thousand years only can have elapsed since the mound-builders were compelled to abandon the valleys of the Ohio and its tributaries, and but seven or eight hundred since they retired from the shores of the Gulf of Mexico. Lastly, the early explorers found mounds occupied

and even being constructed within the last few hundred years. So we must content ourselves with the conclusion that, whatever the period of their initiation, it is probable that what may be called the epoch of mound-building, but recently terminated, has been of very long duration. These estimates, divergent as they are, may serve to give some idea of our ignorance in regard to the actual antiquity of these ruins."

As mound-building in this division had not ceased when Europeans appeared upon the scene, it may be inferred from the data presented that one thousand years preceding that date would suffice for the beginning and development of the custom and for the construction of all the known works. That it may have continued for a much longer time is not denied; all that is claimed here is that there is nothing which has as yet been found pertaining to the mounds and other ancient works of the division which bears incontestable evidence of reaching back more than a thousand years previous to the discovery by Columbus.

Prehistoric Movements of Population.

An examination of a map showing the localities of the antiquities would lead, without other evidence, to the conclusion that the larger streams mark the lines of migration, as it is along these the works are chiefly ranged. But the interior of these monuments when exposed by excavation tell a different tale, at least so far as the two great streams, the Mississippi and Ohio, are concerned. These inform us in terms too clear to be misunderstood that the migration has been across these water highways instead of along

their courses. There is no stretch along the Mississippi where mounds and contents of a similar type line either side for a greater distance than the western bank from Dubuque to the Des Moines river, Iowa. As we move up and down, we find repeated changes from one type to another, indicating the presence of different tribes or different customs. However, art lines and even custom lines often cross ethnic lines or fail to coincide therewith. The chief pottery belt, sweeping round in a crescent from middle Tennessee through western Kentucky, southern Illinois and south-eastern Missouri, culminating in eastern Arkansas, must, in the golden age of the mound-builders, have embraced two or three, if not more, tribes, belonging apparently to different stocks. In Tennessee and southern Illinois the chief mode of burial was in box-shaped stone sarcophagi, a mode of sepulture almost entirely unknown in that part of the crescent west of the Mississippi.

Comparing the antiquities of the different sections of the division, it would seem that some in the Gulf States, in Ohio, south-eastern Indiana, and in Illinois, in the vicinity of St. Louis, bear indications of greatest age, while those of New York and Canada present the fewest evidences of antiquity. That the latter are attributable to the Iroquoian and possibly Algonquian tribes inhabiting those sections at the time they were first visited by the whites, is now generally conceded, but the particular tribes or even stocks to whom the former are to be ascribed is yet an unsettled question. The author has given reasons in previous publications for believing that some of the principal works in Ohio and the valley of the Great Kanawha,

West Virginia, are attributable to the Cherokees, with whom he identifies the traditional Tallegwi or Tallega. This view has also been adopted by some leading authorities.

The fact that the mound-builders do not appear to have extended their permanent settlements eastward of the Alleghany Mountains, north of Tennessee and North Carolina, would seem to mark this chain as an important prehistoric boundary line. While various speculations, more or less reasonable, may be based on this fact, there is one deduction which it would seem may be fairly drawn therefrom. This is, that the mound-builders did not enter their territory from the Atlantic coast; or to be on still safer ground, that the custom of building mounds was not derived from that direction. Nevertheless, the culture and type zones, so far as they have any bearing on the question of prehistoric migration, appear to indicate that this was along east and west lines. The chief stone-grave area extends from southern Illinois to northern Georgia; it is almost exclusively along the same line that the few stone images and certain types of copper articles have been discovered; and certain types of mounds and pipes have been found chiefly along a line extending from eastern Iowa through Ohio and West Virginia to eastern Tennessee and western North Carolina. The chief pottery belt has already been mentioned; and what may be appropriately termed the Huron-Iroquois belt extends from the lower St. Lawrence river to Lake Michigan. In the Gulf States there is a strong general resemblance of types from the Mississippi river to South Carolina. On the other hand, the effigy mounds are confined almost exclu-

sively to the region west of Lake Michigan; and the section void of mounds, as already stated, lies to the east of the Alleghany range.

There are, however, some features which appear to indicate erratic movements or the breaking away of minor groups from the main bodies. The explorations made by Mr. Clarence B. Moore in the sand mounds of north-eastern Florida have brought to light a number of types which seem to show intercourse of the builders with the authors of the mounds and stone-graves of middle Tennessee, though no stone-graves are found in the Florida region. Two or three effigies occur in Ohio and two in Georgia; and two or three tribes of the Siouan stock formerly resided in North and South Carolina. The buttressed walls of the inclosures in south-western Indiana and west Tennessee heretofore referred to, of similar type to those of Aztalan, Wisconsin, suggest another wandering branch of the Wisconsin mound-builders, probably Siouan. Another fact to be noticed in this connection is, that the types of eastern Arkansas, north of the mouth of Arkansas river, appear to be wholly disconnected from those on the east side of the Mississippi opposite thereto. The pottery, as before stated, connects with the middle Tennessee types by way of south-eastern Missouri and southern Illinois, but there seems to be no connection between the opposite sides of the river from the mouth of the Ohio to the mouth of the Arkansas river. But this rule does not appear to apply to the section south of the latter, as there is some evidence here of ancient intercourse in the resemblance seen in some of the types.

Although the monuments indicate, to some extent, movements of population, yet until those of a particular class or locality can be assigned with reasonable certainty to a particular stock or tribe, they aid but little in tracing these movements. Moveover, it is presumable that during the mound-building age, the mound-building tribes were generally sedentary.

The physical conditions of the section present no features calculated to determine the chief line or lines of migration. The great rivers have been referred to as marking these lines, but, as has been shown, the mound testimony does not favor this theory, at least so far as it relates to the Mississippi and Ohio, and the rivers south of the lakes, except perhaps the Wisconsin. The St. Lawrence and some of the streams north of the lakes were apparently lines of migration. There are, however, no physical reasons why migrations within this area might not have been in any direction. It is true there are some lines which are traversed with greater ease than others, but there are no physical features sufficiently prominent to justify us in basing thereon a theory of migration. It is necessary, therefore, to turn to language, traditions, customs and folk-lore in any attempt to trace the migrations of tribes which brought them to their historic seats. Several theories have been advanced as to the point or points of original entry, or direction whence the immigrants came, but, as all except two seem to have been abandoned, it is only necessary to allude to these. One of them, which is advocated by some of our leading ethnologists and linguists, is that the initial point was on or near the north Atlantic coast, and the general movement west and south. As

the author has given his reasons elsewhere (American Antiquarian, 1896) for rejecting this theory, they will not be repeated here. That opinion which has generally prevailed in the past, and is still maintained by a large portion of the students of the present day, is that the movement has been mainly from the north-west toward the south, south-east and east.

So far as linguistic and traditional evidence can be traced, it leads to the conclusion that the general movement, in prehistoric times, of the stocks in the United States, was toward the south and the south-east. The body of the Siouan stock was about the headwaters of the Mississippi river, while its offshoots were in Arkansas, southern Mississippi and the western part of Virginia and the Carolinas, the latter group claiming to have migrated from the north-west. The Iroquoin family was located, as above stated, around Lake Ontario, one offshoot was in south-eastern Virginia, and another, the Cherokees, about the headwaters of Tennessee river. The latter tribe, as appears from traditional and other evidence, formerly lived about the upper Ohio and were mound-builders. That the widely separated localities of these outlying bodies, from the stocks to which they belong, are proofs of migration, can not be denied, and that the direction of the movements was south and south-east, seems apparent, from the fact that the offshoots are all south of the main bodies.

Whatever theory is adopted, it must have in the background a door of possible entry leading to a source of supply (i. e. population). The theory of an eastern origin seemingly looks across the Atlantic to southern Europe or northern Africa, and is so stated by some

advocates. The doorway open to the other theory, which the author believes to be the correct one, will become apparent in the sequel. As the writer has given elsewhere (American Antiquarian, 1896–7) a somewhat full statement of the supposed prehistoric movements of population in the Atlantic division, a brief summary only will be presented here.

The movements of the tribes of the Algonquian family appear to have been toward the south, southeast and east, until the rising power of the Iroquois and the planting of European colonies along the Atlantic coast caused a recoil and return toward the west. This historic westward movement and certain traditions referring to limited westward movements west of Lake Huron, appear to have given rise to the theory of an eastern origin. The initial point of the Algonquian movement will appear, from a thorough examination of the subject, to have been in the area north and north-west of Lake Superior.

Mr. Gallatin, who studied the languages of the family with special care, expresses the opinion in his "Synopsis of the Indian Tribes," that the northern Algonquins, those dwelling north of the lakes, were the original stock. Dr. Horatio Hale, though maintaining a general movement westward and southward, says in his "Indian Migrations" (American Antiquarian, V.), "The country from which the Lenape [Delawares] migrated was *Shinaki*, 'the land of fir trees,' not in the west, but in the far north, evidently the woody region north of Lake Superior." Dr. Brinton ("Lenape and their Legends"), remarks as follows in regard to the tribal relations: "Which of them [the dialects] had preserved the ancient forms

most closely, it may be premature to decide positively, but the tendency of modern studies has been to assign that place to the Cree, the northernmost of all."

The author has given in the papers above referred to what he believes are sufficient reasons for concluding that the Lenape migration, which probably included other tribes than the Delaware, crossed to the south side of the lakes in the region of Michilimackinac, entering the southern Michigan peninsula. Here, after a long halt, they divided, a part, probably the Shawnees, going south; another, possibly the Miamis, remaining in southern Michigan; the rest (the Delawares, Nanticokes, etc.) moving onward toward the Atlantic coast. That the Ojibwas, who were first heard of by Europeans as living in the vicinity of Sault Ste. Marie, formerly resided north of Lake Superior near the Crees, with whom they are closely related linguistically, is more than probable. As tradition makes the Ottawas and Pottawotomis originally one with the Ojibwas, they must have come from the same quarter. The Mascoutens entered the southern Michigan peninsula at its northern point and passed around the lake into Wisconsin. The Sacs and Foxes, moving down the eastern shores of Lake Huron, came in contact with the Hurons and were pressed westward through southern Michigan into Wisconsin.

These westward movements are easily explained on the theory advanced. Supposing the Algonquian stream to have had its source in the region south and west of Hudson's Bay; flowing south-east, the Huron-Iroquois stock, located along the northern shores of lakes Erie and Ontario, would be a barrier which would turn its southern branch south and west precisely as

the movements of the tribes appear to have been, and which we know were accelerated at a later day by the attacks of the Iroquois. The northern branch would pass on toward the east along the Ottawa and other streams. The Nascapee of Labrador, the most north-eastern tribe of the family, claim by their traditions to have migrated from the west coast of Hudson's Bay, and the close linguistic relation of the Montagnais to the Crees and Ojibwas indicates that they came from the same region. Dr. Hayden and G. B. Grinnel agree in locating the former home of the Siksika (Blackfeet) far north in British America, the latter, with a considerable array of evidence, as far north as the Lesser Slave Lake. It would seem, therefore, that the movements point to the region along the southern and western shore of Hudson's Bay as the original home of the family.

Some of the traditions, it is true, allude to the tidal sea, but when these are carefully studied it will be seen that they apply more readily to Hudson's Bay than to the Atlantic Ocean or Gulf of St. Lawrence. For example, it is stated in the Lenape Legend (Walam Olum) that in leaving the sea and going toward the east or south-east (as the north is spoken of as in the rear), they moved up the streams in their canoes. This will apply correctly to Hudson's Bay, but by no possible straining to the Atlantic coast. That New England and the Atlantic coast regions south to Virginia were peopled from the Delaware group is the prevailing opinion of ethnologists of the present day.

Little can be said in regard to the prehistoric movements of the Iroquoian tribes. That the offshoots in Carolina and Virginia came from the north is con-

ceded. It is also conceded that the entire family, exclusive of these offshoots, resided in former times north of the St. Lawrence, and the weight of evidence leads to the conclusion that they preceded the Algonquins in the occupancy of the eastern region. If the conclusion reached in regard to the movements of the Algonquins is accepted, it would seem reasonable to assume that the Iroquois moved in the same general direction. Moreover, if the place where they were encountered by the Lenape was at the west end of Lake Erie, as seems probable from the tradition of the latter, this would indicate that the Hurons were, at this early date, immediately east of Detroit river. Dr. Daniel Wilson, basing his conclusion on a tradition that they formerly dwelt by the side of the sea, locates this primal seat on the Atlantic coast north-east of the mouth of the St. Lawrence. But this tradition might as well apply to the shore of Hudson's Bay as the Atlantic coast, as the dim remembrance of having dwelt by the side of the sea would naturally have been transferred by them, after long residence on the St. Lawrence and a knowledge of the ocean, to its shore. It is significant that Brownell, whom he quotes, says: "Some fanciful tales of a supernatural origin from the heart of a mountain; a migration to the eastern seaboard; and of a subsequent return to the country of the lakes and rivers, where they finally settled, comprise most that is noticeable in the traditions of the Six Nations prior to the confederation." This tradition appears to furnish the key to the problem, and indicates a western origin.

The opinion advanced by some ethnologists that the

movements of the Siouan tribes in prehistoric times have been from the south-east to the north-west is based chiefly on the archaic character of the dialects of the eastern tribes (Tutelo, Saponi and Catawba) and theory of general westward movements. However, it is admitted that the Winnebago dialect stands in relation to the Tutelo as the Mohawk to the Huron in the Iroquoian family. The opinion, however, that these southern tribes are offshoots from the main body of the family group in the north-west seems to be too well grounded to be overturned by any evidence or arguments which have, as yet, been presented.

It is well known that the great body of the family at the earliest notice of them obtained by Europeans was located in the north-west chiefly about the headwaters of the Mississippi. The tradition of the south-eastern tribes, as given by Lederer and others, is that they came from the north-west. Gallatin says that the tradition of the Iowas, Missouris, Otos, Omahas and Poncas (Siouan tribes) is, "that, at a distant epoch, they, together with the Winnebagoes, came from the north; that the Winnebagoes stopped on the banks of Lake Michigan while they continued their course southerly, crossed the Mississippi, and occupied the seats in which they were found by the Europeans." Most of the south-western tribes claim that they are offshoots from the Winnebagos, a claim which Dr. Hale says Mr. Dorsey has shown by linguistic evidence to be correct. The general trend, therefore, of the evidence is that the place of dispersion was in the north-west, and that the course of migration has been south and south-east. The tradition of the Iowas refers to

crossing some water in the region of the great lakes in their journey from the north-east. The Winnebagos, according to Schoolcraft, claim to have come from some point north of the lakes, apparently around the east end of Lake Superior. It would seem probable from their relation to the Sioux and Assiniboins of the north-western plains that all had come from some locality north of Lake Superior and west of Hudson's Bay, the western tribes moving south around the west end of the lake and the Winnebagos and their offshoots around the east end. The Siouan migrations were probably in advance of those of the Algonquins, and it is possible that the Tutelo and other south-eastern tribes separated from the Winnebago group in the region of Michilimackinac and passed south through Michigan and Ohio.

Although there are traditions in regard to the migrations of the Muskhogean tribes, we learn but little therefrom except the fact or belief that they came from some place in the west. On this point there are no dissenting views; but from what place or region in the west is an unanswered question. That they and other tribes of the Gulf States had long resided in that section when first encountered by Europeans, is indicated by the numerous monuments scattered over the south, which, as the evidence shows, are attributable to these aborigines. According to Mr. Gatschet, *wahali*, the Hitchiti word for "south" (which appears to be the same as the Creek term, *wahali*) signified originally "down-stream." This would seem to imply that it had been adopted from the course of the Mississippi and the rivers east of that stream. It is not probable that a term with this

signification would have been adopted for "south" while residing west of the Mississippi.

A notion has prevailed, to a considerable extent, that the builders of the principal earthworks of Ohio and Kentucky moved south, and were incorporated into the tribes of the Gulf States or were ancestors of these tribes. A careful study of the Ohio works, their mode of construction and their contents, does not confirm this theory; in fact, the evidence they furnish is decidedly against it, as it shows that there is a marked distinction between the mode of construction and contents of the works of Ohio and those of the Gulf States. A few of the Kentucky works appear to be of the same types as some of those in the south; on the contrary, however, those of Tennessee are essentially different, if we except some found along the Savannah river. We therefore derive little aid on this question from the antiquities. That the Muskhogees moved from the north, southward, is quite probable, in fact may be assumed, and that they preceded the other stocks, which we have mentioned, in the occupancy of the district, may be considered as evident. Whether they moved southward on the east side of the Mississippi or west of it, can not be decided; however, the weight of evidence and authorities appears to be in favor of the west side.

Perhaps we are not advancing too far into the field of conjecture in assuming with Morgan a possible relation of some kind, at a very distant date, between the Muskhogean and Siouan groups.

It is a singular fact that Mr. Gatschet, without having any reference to this supposition, remarks as

follows in his work on the "Migration Legend of the Creeks":

"One of the most ancient features of an Indian language is reduplication for inflectional purposes. In this we observe a thorough difference between Maskoki and the languages west of the Mississippi river. In Maskoki, the second syllable is the reduplicated one in adjectives and verbs; west of the river, at least in Tonica, Atakapa, and Tonkawe, it is the first one. Linguists able to appreciate this circumstance fully, will not deny that it is of great weight in separating certain classes of linguistic families from each other, and consequently, to assign them different areas in primordial epochs. The Sahaptin and the Dakotan excepted, no other linguistic family of North America is known to me which reduplicates for inflectional (not for derivational) purposes in the same manner as Maskoki."

These, it is true, are but slight pointers; nevertheless, as they drop into place with other indications, we are justified in adopting this supposition until some sufficient reason for abandoning it is presented.

It has been suggested in the past by one or two authorities, although the idea has not received any modern support, that the ancestors of the Iroquoian and Siouan families were at a very remote date united, or in other words, that the two groups had the same origin.

It would seem from what has been presented, that the prehistoric migrations of the different stocks, if they have been traced with reasonable certainty, point to a primitive home north of Lake Superior.

There is another fact which appears to have some

bearing on the question of the general course of migration in this section. This is the distribution of copper as revealed by mound explorations. Although the writer is inclined to believe that more of the copper found in mounds was derived from foreign sources than is generally supposed, it is nevertheless certain that the larger portion was obtained from the mines of the Lake Superior region. Numerous specimens from this source have been found in all parts of the mound area, even to the extreme east and south-east. It is true that the use of this metal would, after its discovery, gradually travel back along the line, though the migration was westward; yet its early distribution, as shown by its presence in the oldest mounds, would indicate a long acquaintance with the source of supply. And this acquaintance would have been much earlier if the migration was from the north-west than if it had been from the east. If the tribes in the north-west came from the east, the movement would have been north-westward, and, after the discovery of the copper mines of the Lake Superior region, the knowledge of it and the custom of using it would have been carried onward by the migrating tribes. It appears, however, that precisely the contrary is the fact. We learn from "Notes on the Western Dené," by Rev. A. G. Morice, who has been for many years a missionary to that people and is well acquainted with their customs and traditions, that although they made some use of copper in prehistoric times, it appears from their traditions that it was brought from the north-western coast.

Rev. E. Petitot (Rapport succinct sur la Geologie des valles de l'Athabascan) says: "Before the arrival

of Europeans in the valley of the Mackenzie, the 'Yellow-knives' and the 'Dog-ribs' were acquainted with the use of the native copper, which they found on the borders of the Copper-mine river. Of this they manufactured knives, from which they received their name. They made use at the same time of polished stone. Therefore we have here the contemporaneity of polished stone and bronze. The 'Hares' (Peaux-de-Lievre), on their part, who were ignorant of the use of copper and did not give themselves the trouble to polish their instruments of stone, had discovered the length of the Mackenzie to the mouth of the river L'e ota-la delin." It appears from these facts that the copper used by these north-western tribes was not brought from the Lake Superior mines, but from other more northern and western sources. How far north-west Lake Superior copper is found in mounds is unknown to the writer. It is at any rate reasonable to suppose it was in use among the Crees, but not among any tribe north and west of them. If this be correct, it is a fact having an important bearing on the questions relating to the trend of the general migrations. It indicates that these migrations were south and east, instead of north-west.

Another fact which has a strong bearing on the questions relating to the migrations of the Siouan tribes, which has not been mentioned, is that the north-western tribes of the family, or at least most of them, did not cultivate the soil, did not rely upon agriculture for any portion of their subsistence—in fact, when first encountered by the whites, cultivated no corn. If they had resided in the Ohio valley before going to the north-west, unless previous to the

cultivation of this cereal in the southern section, they would undoubtedly have acquired the custom and carried it with them. There is, however, no one, it is presumed, who will contend that this movement was at such an early date as to precede the cultivation of this cereal, for it is not likely they would have left this region, which is one of the most attractive in the Atlantic section, except under strong pressure from other tribes.

Some general remarks in regard to Indian migrations will be presented in a future chapter.

CHAPTER XII.

THE PACIFIC DIVISION.

This division, as already stated, embraces all the western part of North America, including the whole of the great mountain divide to the eastern ridge of the Rocky Mountain chain, the Athapascan territory on the north, and all of Mexico and Central America on the south. The ethnology and archaeology of the intermontane region appear to be closely allied by most of their leading characteristics to those of the Pacific slope, while on the other hand they are quite distinct from those of the Atlantic division; hence the ethnology of the mountain region must, as would naturally be presumed, be included in the Pacific division.

If we take Major Powell's Linguistic Map accompanying the 7th Annual Report of the Bureau of American Ethnology, and draw a line from the mouth of the Rio Grande to the extreme headwaters of the upper Saskatchewan river, and another thence to the vicinity of Hudson's Bay near the mouth of Churchill river, these will correspond very closely with the lines separating the two great divisions as herein outlined, and also almost exactly with the dividing lines between the linguistic stocks of the two great divisions, if the Athapascan be included in the Pacific group. This stock has usually been considered as belonging to the Atlantic slope, as it is found chiefly east

of the Rocky Mountain range; however, as will appear further on, all the affinities of the group are with the Pacific division, and, although some of the tribes have long been in contact with, or in the vicinity of the Algonquin Crees of the Hudson region, they still exhibit more of the north Pacific types in their customs, arts, etc., than of the Atlantic.

No attempt will be made here to designate the different culture areas composing this division, as our knowledge in regard to the archaeology of California and the regions north, and of north-western Mexico is too imperfect to justify us in so doing. However, as a matter of convenience in making comparisons and to avoid repeated explanations, the division will be considered in four geographical sections, as follows:

1. The Mexican section, including most of Mexico and all of Central America, embracing the region of the most advanced civilization of ancient North America.

2. The Intermontane or Pueblo section, including the region extending from the western border of Texas to California and from central Utah to Zacatecas in Mexico. In other words, the region of the Pueblos (in the modern sense in which that term is used) and cliff houses.

3. California.

4. The Northern section, including the coast region north of California to the Eskimo territory, and the area occupied by the northern Athapascans east of the Rocky Mountain range.

The North Pacific Section—Athapascan Region.

As the marked variations in several respects found

in the different parts of the area included in this section forbid any general classification of types applicable to the whole section, brief reference will be made to these different parts successively.

Turning again to the linguistic map above mentioned, it will be seen that the northern Athapascan group covers the larger portion of Alaska and northwestern British America. There are two or three small outlying colonies on the coast of Oregon and California, while the southern group of the family spreads over the larger portion of Arizona and New Mexico, extending to an undefined distance into northern Mexico. The important bearing which the distribution of this stock has upon the question of prehistoric movements in the Pacific division will be referred to hereafter; at this point reference will be made only to the northern group.

The area occupied by this northern group offers very little, in fact next to nothing, in the line of antiquities, and hence has been entirely overlooked in works relating to prehistoric America; nevertheless, there are some types of art which have come down from prehistoric times, some indications of former position that are valuable as a means of comparison. Neither mounds, fortifications, nor earthworks of any kind are found in this region, and but few artefacts belonging to a former age have been discovered.

From Rev. A. G. Morice, to whom we have heretofore more than once referred, who has given special attention to their language and customs, we learn the following facts: Tobacco and the use of the pipe were unknown to them until about 1792. The earliest form of their pipe appears to have been

obtained from their neighbors immediately south. Most of their stone implements, some of which were still in use a century ago, were comparatively rude and but partly polished. Some of the tribes, however, had made more advance in this respect than others, yet their finest specimens were obtained by barter from the seacoast Indians. Their so-called stone axes—or more correctly, celts—when hafted, were really adzes, as that shown in Fig. 7, which could not be used in cutting wood crosswise. There seems to be a strong similarity in the use of this implement among the Dené (as the northern Athapascans will be designated here—this, according to Morice, being the correct native name of the people) to its use among Eskimos, especially those Eskimos in the vicinity of Point Barrow. Mr. Murdoch (9th Annual Report Bureau of American Ethnology) says: "Though axes and hatchets are frequently obtained (by the Eskimos) by trading, they are never used as such, but the head is removed and rehafted so as to make an adze of it."

The other stone implements, which consist almost wholly of arrow and spear points, scrapers, and knives, present no marked peculiarities. A few pestles have been found, also a kind of stone war club. (Fig. 67.) Rev. Morice, from whose work our figure has been copied, says that, although the specimen figured has a portion of the larger end broken off, the outline has been drawn from comparison with other specimens. To the knob at the small end was fastened a buckskin line which being firmly wound around the wrist prevented loss of the instrument in battle. This find is at least interesting from the fact

that another implement similar in form, which appears to have been used for a similar purpose, was discovered some years ago in Bent county, Colorado. This specimen (Fig. 68), according to the finder, Mr.

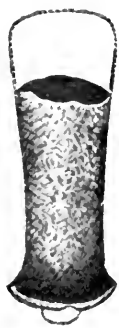

Fig. 67. Dené stone war-club.

Fig. 68. Stone war-club, Colorado.

J. B. Aldrich, quartermaster in the United States army, was dug out of a mound situated just south of the Arkansas river in Bent county, south-eastern Colorado. He says: "It was the theory of Kit Carson, who accompanied the command, that it had been secreted there by some of the Comanche or Apache Indians, who then occupied the territory. The hole was filled with the remnants of the loop made of vegetable fiber." (The Apaches, as has been stated, are an offshoot of the Athapascans.) Its marked resemblance to the traditional weapon of the New Zealanders, known as *Patu-patu*, was noticed and mentioned by the Smithsonian cataloguer. However, Judge Wickersham, who is familiar with the antiquities and art of the north-west coast, says weapons of this type were common from Alaska to

southern Oregon. The most serviceable carving-knives among the prehistoric Dené were beaver teeth sharpened by rubbing on a stone.

Morice thinks the prehistoric Dené made but scant use of copper, though it was not unknown to them. Petitot says that, previous to the arrival of Europeans in the valley of the Mackenzie, two of the tribes—the Yellow Knives and Dog-Ribs—made use of native copper which they obtained along Coppermine river. However, some of the copper articles in use, or copper out of which they were formed, appears to have been obtained from the coast Indians. As might be inferred from their extreme northern position, pottery and clay articles were unknown to them, their vessels being made of the bark of trees.

Brief as this notice is of the antiquities of this region, it covers about all that can be said in general terms regarding them. So far as comparison can be made between the customs, arts and beliefs of the Dené and surrounding peoples, they appear to be most nearly related to those of the coast tribes. The northern Dené were an inartistic people, having made less advance in this respect than the Eskimo north of them and less than the tribes west or south. Their chief importance in the study of prehistoric North America is the evidence furnished by their distribution, of the lines and general course of migrations in the Pacific division.

It was a great triumph of linguistic science when it made known to the world that the Apaches of Arizona and northern Mexico, the Hupas of California, the Navajos of Arizona and New Mexico, certain small tribes on the coast of Oregon, and the Lipans near the

mouth of the Rio Grande, are relatives of the northern Dené and parts of the great Athapascan stock, who had, in prehistoric times, made their way southward to the regions they are found inhabiting.

It is quite probable that Mr. Gatschet is correct in tracing the route of these two detached portions of the great family along the eastern base of the mountains. "This southern branch of the Tinne race," he remarks, "detached itself in early ages from the Chipewayans, or from such other tribe in their vicinity to which the dialectic affinities of both may direct us after a close investigation. They followed the buffalo herds along the eastern base of the Rocky Mountain ridge to the Pecos river, and then took possession of the arid regions along the upper and lower Rio Grande and the Gila river." Their former positions, so far as these have been ascertained, appear to correspond with this supposition. Mr. F. W. Hodge, who has studied the subject, is inclined to believe that the appearance of the Navajos in Arizona and western New Mexico is a comparatively recent event, antedating but little, if any, the first appearance of the Spaniards in that region.

It is reasonably certain that some of the offshoots from this family which moved south, and finally settled in what is now Oregon, were turned westward at the great flexure of the eastern mountain-range in western Montana. Here, leaving the headwaters of the Missouri, they must have moved westward over the easy passes to the regions beyond; or their passage over the range must have been at some point further north. Possibly the more southern branches may have crossed the range from the headwaters of

the Missouri and moved southward through Idaho and Utah, though the route suggested by Mr. Gatschet appears to be the more likely one. However, be the conclusion in regard to the routes what it may, the evidence that the movements were southward and that the northern group represents the original stock, and the northern position the original home, is not questioned. Another important conclusion to be drawn from these facts is, that the broad, treeless plains were a greater barrier to east and west migrations than the great Rocky Mountain ranges. It is, perhaps, legitimate to conclude that the route to the south-east was barred by prior occupants. It is admitted by Sir Alexander Mackenzie, and affirmed by other explorers, that the Dené entered their known habitat from some section more to the north-west, apparently on or near the Pacific coast, and were in part looked upon as comparative strangers in the southern portion of the region occupied by them.

The North Pacific Coast.

The physical conditions of the northern coast region, which must have had some influence in shaping the customs, beliefs and arts of the people, are widely different from those of the section inhabited by the cliff-dwellers, and also of California—in fact, as near the opposite extreme as they well could be. The territory is mostly very broken and mountainous, and the coast sections much divided and deeply indented by bays and water channels. The waters are deep and the tidal currents swift, the tide rising through a range of twelve to twenty feet, making navigation in places extremely hazardous, yet travel

is and has been mostly by water. The country is, as a general rule, densely wooded with spruce, hemlock, white pine, fir, beech, etc., a condition well calculated to give a somber hue to the beliefs and superstitions of the people. As we should readily infer, the intimate relations of the inhabitants with the sea is strongly reflected in their superstitions, symbolic figures, and art.

The most advanced culture of the section is found among the Haidah Indians, who have, from prehistoric times, inhabited the Queen Charlotte Islands and parts of Prince of Wales Archipelago. They have considerable taste in the use of colors; are advanced in the art of drawing; their carvings in wood and slate show a high degree of culture in this respect. Our interest, however, lies chiefly in the figures which they carve in slate and wood, weave into their textile fabrics, paint on their dwellings, and tattoo upon their bodies, as many, perhaps most, of these have come down from prehistoric times, and serve to throw some light on their past.

One of the first things to attract attention in studying these figures is the persistent effort to introduce, wherever it is possible, conventionalized human and animal faces and forms. Take, for example, the pictograph shown in Fig. 69, which we copy from the excellent work by Ensign A. P. Niblack on "The Coast Indians of Southern Alaska and Northern British Columbia," representing *T'kul*, the wind spirit, and cirrus clouds, explaining the Indians' belief in the causes of the changes of the weather. The central figure is *T'kul*. On the right and left are his feet, in-

dicated by long streaming clouds. Above, at the sides of the head, are the wings, and on each side are

Fig. 69. North-west coast pictograph.

the different winds, designated by an eye and represented by patches of cirrus clouds.

Fig. 70. Ceremonial dress of Chilkat chief.

Another characteristic custom of this north-west coast region is the tendency to place one figure on another in their carved totem posts and paintings, and even in their textile fabrics. Fig. 70 represents the ceremonial dress of a Chilkat chief. Brown, yellow, black and white are the colors used, and the chief figures are conventional representations of *Hoorto,* the bear. In Fig. 71, copied from Niblack's work, is represented a totem post from the north-west coast, and for comparison, one (the right-hand) from New Zealand. In these, which are not the most characteristic that might be selected, we see clearly displayed the custom of placing symbolic figures one above another in the same group. In many of these posts, as seen in that at the left of the figure, we observe the lolling tongue, often stretching down to some animal figure below.

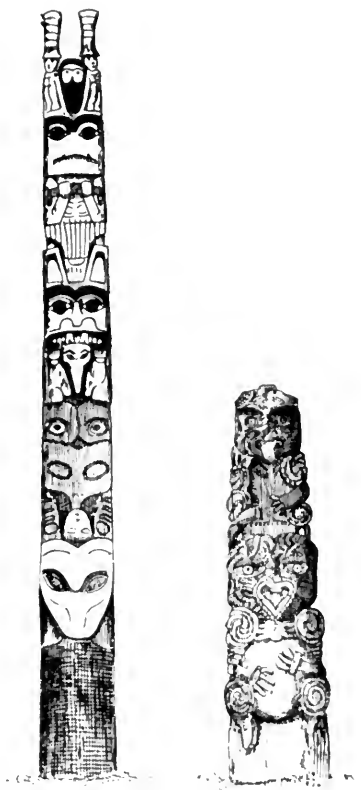

Fig. 71. Totem posts of north-west coast.

This mania, if we may so call it, for introducing

symbolic figures, is carried to such an extent that we find them not only in the places indicated, but also on their war-clubs, oars, masks, rattles, and even on their fish-hooks.

The strong general resemblance which many of these figures bear to some of those found in Central America is too evident to be overlooked, whatever may be the explanation given. The method of bounding and grouping the various symbols or individual pictographs, as seen in Fig. 69, reminds us, in the general appearance, of the forms and method of grouping in the Maya hieroglyphic writing and sculptured inscriptions. The superimposed square faces on the ceremonial robe (Fig. 70) are almost a repetition in idea and form of the square, conventionalized face series seen in the façades of some of the ancient Yucatec structures, as the Casa de Monjas (Fig. 101), sculptered front at Kabah, etc. The custom of placing one figure upon another, human and animal, as in the totem posts, also appears to some extent in Central America. We also find in this southern section the lolling or protruded tongue, as in the Sun Tablet of Palenque and elsewhere.

The resemblance between some of the north-west coast figures and forms seen on the pottery and other works of art of the Province of Chiriqui, as presented by Mr. Holmes in the Sixth Annual Report of the Bureau of American Ethnology, is remarkable. Resemblances in other respects might be pointed out, but those given will suffice to direct attention to lines of research which may prove fruitful in results. They are the more important from the fact that they

are not found when we compare with them the types of California and of the Atlantic side of the continent.

On the other hand, there is a strong general similarity between the figure types of the north-west coast and those of the South Pacific islands, a resemblance which has been repeatedly mentioned by writers, even by those who draw no inference therefrom as to affinity, relationship or prehistoric intercourse between the peoples of the two sections. The use of labrets and masks are customs of this north-west section unquestionably handed down from prehistoric times; and although in use among tribes in different parts of the world, have some bearing in the former relations of the people of this section. The custom of wearing labrets appears to have been formerly in vogue among the western Eskimo and southward to Puget sound, in Mexico, and thence southward to the Isthmus of Darien and among a number of South American tribes on both sides of the Andes. What renders it important in the study of the prehistoric times of North America is the fact that there is no evidence that it prevailed at any time in the interior or eastern portion thereof, and that it was never in vogue in that portion of the western coast between Columbia river and Mexico. Why it should have spread along this western border of the northern continent among widely diverse ethnic stocks, yet skipping the California region as tabooed territory, is a question difficult to answer. In this fact, however, we see another of those strange links apparently connecting the customs of the north-west coast with those of the Central American region.

The use of masks in ceremonies, dances, etc., was

an important custom of the tribes of the north-west coast and in Mexico and Central America. Although in use among the western Eskimo, they were, according to Dr. Bessels, unknown in Greenland. It also appears to be certain that the use of masks by the people of the Atlantic side of the continent was comparatively rare and formed no prominent feature of their festivals and ceremonies. The custom of tattooing, which prevailed in certain sections of the west coast, appears also to have been a survival from prehistoric times, and forms an item of evidence in studying the relations of these tribes.

The articles of stone formerly in use in this section are, as a general rule, similar to those of the Eskimo already mentioned. The exceptions are the carved slate articles of the Haidahs on the one side and the stone lamps and pots of the Eskimo on the other side.

The earliest mention of the mode of burial only reaches back to the latter part of the eighteenth century. Dixon describes the method followed by the Yakutat as follows:

"The manner in which they dispose of their dead is very remarkable. They separate the head from the body, and, wrapping them in furs, the head is put into a square box; the body in a kind of oblong chest. At each end of the chest which contains the body, a thick pole about ten feet long is driven into the earth in a slanting position, so that the upper ends meet together, and are very firmly lashed with a kind of rope prepared for the purpose. About two feet from the top of this arch a small piece of timber goes across, and is very neatly fitted to each pole; on this piece of

timber the box which contains the head is fixed and very strongly secured with rope; the box is frequently decorated with two or three rows of small shells, and sometimes teeth, which are let into the wood with great neatness and ingenuity; and as an additional ornament is painted with a variety of colors, but the poles are uniformly painted white. Sometimes these poles are fixed upright in the earth and on each side the body, but the head is always secured in the position described."

The same explorer found in a cave a square box with a human head in it. Instances of cave burial are also mentioned by other authors, but in each case the box containing the remains was present. Vancouver describes some graves on Keku Strait as follows:

"In the vicinity of these ruins were many sepulchers or tombs, in which dead bodies were deposited. These were made with a degree of neatness seldom exhibited in the building of their habitations. A wooden frame was raised about ten feet from the ground, the upper half of which was inclosed, and in the open part below in many, though not all, of them was placed a canoe. The flooring of the upper part was about five feet from the ground, and above that the sides and top were entirely closed in with boards, within which were human bodies in boxes, wrapped up in skins or in matting. These repositories of the dead were of different sizes, and some of them contained more bodies than the others; in the largest there was not more than four or five, lying by the side of each other, not one appearing to be placed above the rest; they were generally found near the

water side, and very frequently on some conspicuous point. Many of these sacred monuments appear to have been erected a great length of time, and the most ancient of them had evidently been repaired and strengthened by additional supporters of more modern workmanship. Hence it would appear that whatever might be the enmity that existed between the several tribes when living, their remains when dead were respected and suffered to rest quietly and unmolested."

However, it seems that cremation was formerly very common, probably the usual mode of disposing of the dead, the ashes being deposited in boxes mounted on columns, or on shelves or compartments in the columns.

The ancient villages indicate a state of warfare. Those discovered by Vancouver on Kupreanoff Island were all situated on the summit of a precipice or steep insular rock, rendered by nature almost inaccessible. These, in addition to their natural advantages, were strongly fortified with a platform of wood laid on the most elevated part of the rock and projecting so far at its sides as to overhang the declivity. The edge of the platform was barricaded with logs of wood placed one on another. In some instances houses were placed on high posts.

Mention is made of mounds near Comox, one hundred and thirty miles north-west of Victoria, which were found to have been built of sea sand, black mold and shells, some of which contained skeletons. Shell mounds are also described as abundant on Vancouver Island. From these have been obtained stone hammers, arrow-points, spear-heads, knives, needles and

awls of stone and bone, and a few stone mortars. As we move south through Washington and Oregon into California, we find the mortar becoming more and more common among the prehistoric articles, indicating a larger use of seeds and other vegetable foods, one type being somewhat boat-shaped, with a projection at one end in the form of a duck's bill as a handle; others cylindrical or hemispherical. Other pecked or polished stone articles also become more numerous, and the variety of chipped implements also increases. A number of original drawings and photographs accompanying a manuscript presented some years ago to the Smithsonian Institution by Mr. A. W. Chase, of the U. S. Coast Survey, on the Shell Mounds of Oregon, show a large variety of stone articles. Among the chipped implements, which are chiefly of agate, jasper, obsidian and sandstone, some of which are finely finished specimens, are arrow and spear-points of almost every known form, knives, scrapers, etc. Among the other stone articles are mortars, pestles, perforated disks (spindle whorls?), three or four specimens of the supposed war-club mentioned above, cylindrical pipes, mullers, paint cups, and a number of specimens whose use is unknown. The articles figured on the plates accompanying this manuscript number some four or five hundred. This collection was made chiefly along the coast in the extreme south-west corner of Oregon. Unfortunately, no detailed description of explorations is given; in fact, most of the articles appear to have been gathered from the surface, chance openings and some slight excavations, the author

having no opportunity to make more thorough explorations.

Most of the articles figured by Mr. Chase, other than the chipped stone implements, belong to that class which may be called the California type.

CHAPTER XIII.

CALIFORNIA SECTION.

Until a more thorough investigation of the antiquities of the Pacific coast, north of Mexico, has been made, it will be unsafe to attempt to outline the minor culture areas of this region; however, it is evident that the prehistoric articles of California, and, to some extent, of the contiguous sections, present certain peculiarities which justify us in speaking of them as the "California type." The differences between the customs and monuments of the former inhabitants of this region and those of the people who lived further to the north, has been, as will hereafter be shown, specially noticed by Mr. Powers in his excellent work on "The Tribes of California."

Although investigations into the archaeology have been carried on to but a limited extent, a large number of native utensils have been discovered and many burial deposits located. Yet, when we take into consideration the large number of independent, native linguistic stocks found along the California and Oregon coasts, one is surprised at the limited number of types found in this region, especially throughout California. Some of the leading types of southern California are shown in Fig. 72. These were discovered by Mr. Paul Schumacher, several years ago, near San Luis Obispo. The pots were carved out of magnesian mica; many sandstone mortars

different in dimensions but similar in form were found, one of the largest of which is shown in the figure, the pestle being of the same material. Quite a number of bowl or cup-shaped articles, measuring from one and a quarter to six inches in diameter, were obtained. These, two specimens of which are shown, were neatly worked out of serpentine, the surface being well pol-

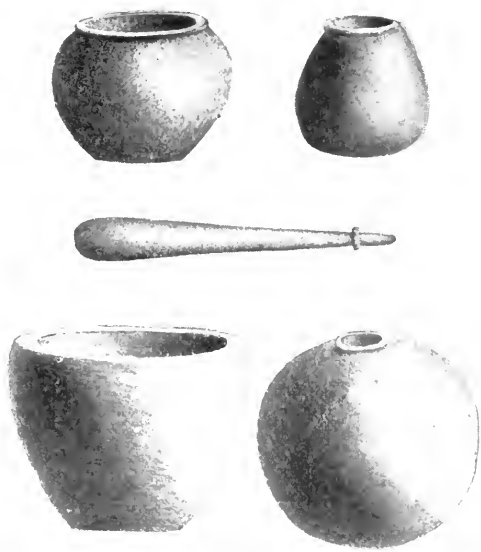

Fig. 72. Relics from southern California.

ished. None of these domestic implements appear to have been intentionally injured before being deposited with the dead.

It is claimed that the New Almaden quicksilver mines were worked by the natives for the purpose of obtaining vermillion, long before the coming of the Spaniards. The excavation made by the original

miners was long supposed to be a natural cavern, extending about one hundred feet horizontally into the hill; ultimately, however, some skeletons, rude mining tools and other evidences of human presence revealed the secret. In various localities about Monterey, in addition to the usual mortars, arrow and spear-heads, holes have been discovered in the living rock, which are supposed to have been used as mortars for pounding acorns and other seeds; it is possible, however, that they are holes from which pot forms were obtained.

An interesting class of California antiquities which have caused considerable discussion, is that which includes aboriginal remains discovered in the mining districts at considerable depths below the surface of the ground, and, in some instances, beneath successive layers of different rocks and earths, and in connection with fossil bones of extinct animals. The following notice of some of these finds is quoted from Mr. Bancroft's "Native Races of the Pacific States."

"Of all the counties, Tuolumne has apparently proved the richest in antiquarian remains. From the mining tunnels which penetrate Table Mountain there was taken, in 1858, a stone mortar holding two quarts, at a depth of three hundred feet from the surface, lying in auriferous gravel under a thick strata of lava. In 1862, another mortar was found at a depth of three hundred and forty feet, one hundred and four of which were composed of lava, and eighteen hundred feet from the mouth of the tunnel. This relic is in Mr. Voy's collection, accompanied by a sworn statement of the circumstances of its finding. Dr. Snell is said to have had in his possession, in 1862, a pendant or

shuttle of silicious slate, spear-heads six or eight inches long, and broken off at the hole where they were attached to the shaft; and a scoop, or ladle, of steatite. These relics were found under Table Mountain at the same depth as the preceding, together with fossil bones of the mastodon and other animals, and are preserved in the Smithsonian Institution and in the museum of Yale College. The cut represents a stone mortar and pestle, found in Kincaid Flat in clayey auriferous gravel, sixteen or twenty feet below the surface, where many other stone implements, with bones of the mastodon, elephant, horse and camel, have been found at different times. A bow handle, or shuttle, of micaceous slate found here will be shown in another cut with similar relics from a different locality.

"At Shaw's Flat, with bones of the mastodon, a stone bead of calcspar, two inches long and the same in circumference, was taken from under a strata of lava at a point three hundred feet from the mouth of the tunnel. A granite mortar, holding about a pint, came from the same mining town.

"At Blanket creek, near Sonora, stone relics and bones of the mastodon were found together in 1855. Wood's creek was another locality where stone relics with fossil bones, including those of the tapir, are reported to have been dug out at a depth of twenty to forty feet.

. . . . . .

"The famous 'Calaveras skull' was taken from a mining shaft at Altaville, at a depth of one hundred and thirty feet beneath seven strata of lava and gravel. The evidence was sufficient to convince Prof. Whitney and other scientific men that this skull was actually

found as claimed, although, on the other hand, some doubt and not a little ridicule have been expressed about the subject. Many stone mortars and mastodon bones have been found about Altaville and Murphy's, but not under lava."

Prof. Dall, in a note to the American edition of Nadaillac's "Prehistoric America," says:

"No reasonable person who has impartially reviewed the evidence brought together by Whitney, and who saw, as we did, the Calaveras skull in its original condition, can doubt that it was found, as alleged by the discoverers, in the auriferous gravels below the lava. The only question to which some uncertainty still attaches itself among geologists is, that of the true age of these gravels in geological time; and whether all the extinct species of which remains are found in them were contemporaneous with the deposition of the gravels, and with the then undoubted presence of man."

Without entering into a discussion of the questions which arise in connection with these finds, it is apparent that the presence of polished and pecked, or, in other words, neolithic implements, exactly like those from graves and refuse heaps, wholly forbids the supposition that here we find evidence of preglacial man. This appears to be the growing conviction of modern scientists, though it has not as yet received the assent of all. How these comparatively recent prehistoric articles reached the depth where found is a question left to scientists to solve.

From the account of some excavations made near Santa Barbara by the survey under Lieutenant Wheeler, the following information in regard to an-

cient burials, relative to the position and character of the objects discovered, is obtained. It should be noted, however, that, although a number of refuse or kitchen heaps were in the immediate vicinity, the burials had not been made in these, nor were they in mounds, but in places where the surface of the ground presented no unusual features, except that it appeared to be slightly depressed at these points, and that here and there ribs and vertebrae of whales protruded above the soil.

"Two feet below the surface the first indications of burials were reached, quantities of broken bones being met with at every stroke of the spade, interspersed with pieces of whales' bones and decaying red-wood. At a depth of five feet, the first entire skeleton was found in position, and near it several others were subsequently uncovered; in all of them the head fronted northward, the face was downward, and the lower limbs were extended. Over the femur of one of the skeletons was a flat plate of steatite, a sort of soapstone, twelve or fourteen inches square, with a hole in one end, which was called a 'tortilla-stone,' its probable use having been for cooking cakes, or tortillas, or else for heating water, the hole in the end serving to draw it from the fire when thoroughly heated. In rear of the skeleton, and to one side of the plate, was an olla, or jar, of steatite, broken, but containing some fine glass beads and human teeth; and behind this, a stone pestle of symmetrical shape, about three feet in length, of a hard species of sandstone, and another plate of steatite, and two large ollas of over five gallons capacity, their mouths or apertures fronting north; and just above was a single

cranium facing the cliff, face downward, and on top of it a single femur. Continuing the excavations toward the cliff, a small sandstone mortar was exhumed, containing a mass of red paint, and in its immediate vicinity a large number of beads of glass and shell, with ornaments made from the lamina of the abalone shell, which is common to this coast, being found in great abundance on the islands some twenty miles distant. Digging still farther, other skeletons were found in similar positions, but in many instances the lower limbs were flexed upon the body, while in a few cases the fingers of the right hand were in the mouth. One skeleton was that of a child, near which were found beads, ornaments, tortilla-stones, and two more ollas, one of which contained portions of the cranium of a child. This skeleton had apparently been wrapped in a kind of grass matting, as small portions were found attached to the bones and scattered near by. In the olla containing the head bones of the child were a great number of small black seeds, smaller than the mustard seed, which were recognized by one of the laborers as a seed used by the present California Indians and natives in making demulcent drinks and eye-washes."

Further excavations are described as follows:

"In one trench, a number of crania and bones were found, in similar positions to the first met with, and also several fine ollas, tortilla-stones, mortars and pestles. All these utensils were invariably in the immediate vicinity of the heads of the skeletons; in fact, in many instances, the crania were covered by large mortars, placed orifice down. In the second

trench, the digging was in an easterly direction, and the first discovery was that of a skeleton and a fragment of iron near the right hand, probably a knife or spear-head, which, archaeologically speaking, was a source of great grief to us, our hope being that no remnants of Spanish civilization would be found in these graves. It could not be helped, however, though a great deal of prehistoric romance was at once destroyed. Near this skeleton was another, and by its side the first pipe met with, which was similar in appearance to a plain modern cigar-holder, and consisted of a tube of the stone called serpentine, eight inches long, the diameter of the wider orifice being a little over an inch. At the smaller end was a mouth-piece, formed from a piece of a bone of some large water-fowl, and cemented in place by asphaltum. How these pipes were used with any degree of comfort is impossible to surmise.

"Continuing this excavation, the next discovery was a steatite olla containing a skull, differing in many respects from those found in the graves; if from one of the same tribe, it shows marked differentiation. Near the olla was a large sandstone mortar, over two feet in diameter, and behind it another olla, containing more bones, and another pipe, 10½ inches in length, and near this latter article a smaller olla filled with red paint. It should have been mentioned that from this trench was procured a femur, showing evidences of fracture through the neck of the bone, which had become absorbed, the head uniting to the upper portion of the shaft between the greater and lesser trochanters. Further search revealed at the same depth a mortar, covered by the shoulder-blade

of a whale, which also contained the skull of an infant, covered with an abalone shell, while near by were paint, a piece of iron, a nail and various shell ornaments and beads. Near at hand, to the rear, were a broken mortar and pot, underneath which was a small olla, the whole covering the skull of a child; and a little deeper, a skull resting upon a fine, large, pear-shaped steatite olla, the outside of reddish color. These remains appear to have been inclosed in a sort of fence, as a plank and stakes of decayed redwood were near by. At the bottom of this trench, just above the firm clay, and under all the specimens just described, was a fine sandstone pestle, 17½ inches in length.

"Continued in the same trench, advancing in a northerly direction toward trench No. 1. At a depth of four feet were two skeletons, and near them was a square cake of red paint; alongside were two more skeletons, over one of which was a large mortar, mouth downward, and close by another similar utensil. Under this skeleton were an instrument of iron fourteen inches in length, a long iron nail and two pieces of redwood, much decayed. A little farther in was a small canoe, carved from steatite. All the skeletons were face downward, heads to the north. In trench No. 1, the digging was continued in a southerly direction. The first object encountered was an enormous mortar, twenty-seven inches in diameter, with its pestle near by. This article was on its side, the mouth toward the south; around it were no fewer than thirty crania, some in a fair state of preservation, and others very friable, broken and worthless. Lying on top of this mortar, on further removal of

the earth, was an almost entire skeleton, with fragments of long bones and of steatite pottery. As surmised by some of the party, the perfect skeleton was that of a chief, and the remains those of his slaves slain with him, which is at least a possible, if not a plausible, view of the case."

Although the results of other excavations are described, those mentioned will suffice to show the modes of burial and the character of the antiquities in this locality. The same party discovered the method of obtaining from steatite ledges the pot-forms, or masses out of which pots were to be carved.

In the somewhat extensive collection made by Lieutenant Wheeler's party in southern California are a number of beautiful specimens of long, slender, chipped flint implements supposed to have been used as knives. Some of these are ten inches in length, and specimens have been found fifteen inches long. Most of the pots (stone) obtained were of the globular form. The stone pipes were almost exclusively of the straight, cylindrical type without bowl, or, in other words, a simple cylinder. These are made of steatite, talcose slate or serpentine, and vary in length from three to ten inches. They are usually smooth and plain, an occasional one only being ornamented by encircling or diagonal grooves. Perforated stone disks, or supposed spindle whorls, form a large part of the collection, these being found in great abundance on the main line and islands of southern California. A few stone articles made to represent the whale were found. The bone articles obtained embrace needles, awls, fish-hooks, harpoon-points, knives and a variety of ornaments. Remains of basket

work and textile fabrics were also discovered, some of which, however, indicate contact with Europeans, as do also a number of iron and glass articles obtained from the graves.

The almost total absence of pottery from this section contrasts strongly with the great abundance found in the pueblo region, though most of the vessels of the two regions are similar in form. The absence of carved figures or imitative designs, and also of ornamentation of any kind, is a marked peculiarity of the antiquities of this region. The angular designs so common in the pueblo region, and even farther south, are wanting here. Utility alone seems to have been the ruling motive in all their manufactures, decoration being entirely overlooked.

The following statements by Mr. Stephen Powers (Vol. III, Contributions to North American Ethnology), who has made a careful study of the California tribes, may be appropriately quoted here:

"The fact of the almost total lack of ceramic remains, and the character of the relics found in Alameda and other shell-mounds, show that the present race must either have supplanted or descended from one which was little more advanced than themselves. The few simple stone implements used by the California Indians resemble, in their main purpose and design, those of the extinct races exhumed in the shell-mounds, only they are conspicuously ruder and simpler. Take the stone mortars, for instance. The prehistorical mortar is carefully dressed on the outside, and has three general shapes, either flattish and round or shaped like a duck's egg with the bowl on the side, or else with the bowl in the

large end and the small end inserted into the ground, or cylindrical with the bowl in the end. But the Indian now takes a small bowlder of trap or greenstone and beats out a hollow in it, leaving the outside rough. Whenever one is seen in possession of a mortar dressed on the outside, he will acknowledge that he did not make it, but found it; in other words, it is prehistorical. The prehistorics used handsomely dressed pestles, sometimes embellished with rings; but the squaw now-a-days simply picks up a long, slender cobble from the brook.

"The prehistorics of California carved out long, heavy knives or swords, of obsidian or jasper, which were probably kept as family heirlooms, from generation to generation, to be paraded as jewelry or borne aloft as a sort of mace on certain solemn occasions. The Indians of to-day have the same articles and use them for the same purpose; but their inferiority to their predecessors shows forth in the fact that they no longer manufacture them, but confine their ambition to keeping them in the family.

"The prehistorics made out of sandstone or other soft stones a small and almost perfect sphere as an acorn-sheller; but the squaw nowadays simply selects for this purpose a smooth cobble from the creek bed.

"In the collection of Mr. A. W. Chase, of the United States Coast Survey, there are spindle-whorls of stone, some of them found in mounds raised by extinct tribes and others found among the Klamath Indians and the Noamlakki in gravel-mining claims. The Indians of this day use no such implement for any purposes whatever. Near Freestone, Sonoma county, I saw in possession of the finder what was

probably a spindle-whorl of pottery, the only instance of the kind I know of.

"In regard to tobacco pipes the deterioration is not so manifest, for I have seen serpentine pipes of as handsome workmanship as any obtained from the mounds, though even these may be old heirlooms. But I still think there is deterioration shown in the fact that the Indians nowadays use so many wooden pipes of the rudest construction; though we have no means of showing that their ancestors did not use equally poor ones, since their wooden pipes, if they had any, have perished.

"Then again, as to the shell-mounds themselves, I am of the opinion that they are merely the accumulations of a race of men who dived for clams, as the Wintun of the Upper Sacramento do to this day, to a limited extent. In other words, the Wintun and other tribes are descended from a people who were more energetic and industrious than themselves."

While this indicates a retrogression in art on the part of the modern descendants of the former inhabitants, it applies more to quality and finish than to types. It is also apparent that Mr. Powers recognizes in the modern Indians of California the descendants of the authors of the antiquities of that region. Hubert Bancroft, alluding to California and the coast region north to Columbia river, asserts that at the time he was writing (1875), there had not been found and reported on good authority a single monument or relic which is sufficient to prove that the country was ever inhabited by any people whose claims to be regarded as civilized were superior to those of the tribes found by Europeans in this section. The presence of iron

and glass articles in some of the graves proves beyond question contact with Europeans, and the general similarity of the articles found in these and the most ancient graves, seems to leave no doubt of their having been made by people in the same culture-status, having the same general customs, though they may have belonged to different tribes and possibly different stocks.

Prehistoric Movements of Population.

If the reader will examine Major J. W. Powell's linguistic map showing the location of the Indian stocks north of Mexico, he will find, if we may use the term, a singular ethno-geographic condition in this west coast region. Between Columbia river and the southern end of California, and extending back but a comparatively short distance into the interior, are crowded more than half the stocks noted on the entire map, yet covering less than half the area occupied by the Shoshonean family which bounds their eastern borders. Among these are seen three detached groups of the great Athapascan family, a fact which may possibly assist, to some extent, in solving the singular problem which is here presented. Are these remnants of larger stocks which occupied this region prior to the coming of the Shoshones, which have been reduced by the latter and pressed toward the coast? That the diminutive size of the groups and their crowded condition indicate such a pressure seems apparent. However, the problem is a difficult one, and will probably never be satisfactorily solved.

That the movements of population in the Pacific division, from the fifty-fifth degree of latitude to the borders of Mexico, were southward, is generally conceded by those who have given attention to the subject. Mr. Stephen Powers not only mentions traditions of movements from the north toward the south, but gives as his conclusion, based on his personal investigations, that such was the general course of migration, in fact speaks of it as a point clearly established.

Judge Roseborough, in a letter quoted by Hubert Bancroft, writes:

"In an ethnological view, the languages of these various tribes is a subject of great interest. They seem to be governed by the geographical nature of the country, which has had much influence in directing the migrations and settlement of the various tribes in this state, where they have been found by the whites; and there have been in remote times at least three currents, or lines of migration, namely: first, one along the coast southward, dispersing more or less toward the interior as the nature of the country and hostile tribes permitted. In so broken and rough a country the migrations must have been slow, and the eddies numerous, leaving many fragments of aboriginal tribes here and there, with language and customs wholly dissimilar. Second, that along the Willamette valley, over the passes of the Calapooya, across the open lands of the Umpqua, southward through the Rogue river valley, into Shasta and Scott valleys. As an evidence of this trace, I may mention that all the tribes on this line, from the Calapooya mountains southward to the head of Shasta and Scott valleys,

speak the same language, and were confederate in their wars with the tribes on Pitt river, who seem to have arrested their progress southward. . . . Thirdly, another wave of migration evidently came southward along the Des Chutes river, upon the great plateau of the lakes, which is borne out by a similarity of languages and customs, as well as by traditions."

Powers remarks in regard to this opinion, "I am inclined to accept this theory, and indeed before I had ever seen Judge Roseborough's letter, I had come to a similar conclusion in regard to the line of southward migration along the coast." Dr. Gibbs, an accepted authority, so far as he alludes to the subject, indicates that the movements in Washington and Oregon have been southward; that of some of the interior tribes he thinks has been toward the south-west.

Further reference to the subject will be made hereafter in discussing the general course of migrations in the Pacific division.

CHAPTER XIV.

THE INTERMONTANE OR PUEBLO SECTION.

Mr. Hubert Bancroft in his arrangement of the Pacific regions, extends considerably the boundaries of this interior section, including under the designation "New Mexicans," the nations of New Mexico, Arizona, Lower California, Sonora, Sinaloa, Chihuahua, Durango, Coahuila, Nuevo Leon, northern Zacatecas and western Texas. However, it seems best to limit it for the present as outlined in a previous chapter, following chiefly the archaeologic indications.

The physical characteristics of this region are so wholly different from those of the mound section as to lead *à priori* to the assumption that here we may expect to find evidences of a widely different culture. Instead of a well-watered country, with a rich soil, covered in most parts by heavy forests, we enter here upon a region traversed by numerous detached and intersecting ranges, between which lie arid regions, half-desert areas with low scanty vegetation, and occasionally fertile valleys, with a scant water supply. Isolated peaks and broad, level mesas arise from the plains. The elevated plateaus are gashed by innumerable cañons, usually dry except for a short time during the limited rainy season, or rather brief rainy spells.

Many of the cañons of this south-western region, which are now dry and parched, with little vegetation

save the low gray sage brush, and entirely devoid of inhabitants, were, in prehistoric times, occupied by a people who built their little villages or communal dwellings against the base of lofty cliffs, or high up the sides in the caves and shelves; or excavated cell-like abodes in the face of the precipices. Sometimes the level top of a lofty mesa was selected as the site of the village, or where the danger from incursions was not great, the level valley. Mr. G. Nordenskiold, in his most excellent work on the "Mesa Verde," of south-western Colorado, has classified these works geographically according to the river systems, as he thinks there are sufficient differences between the types of these systems to justify this arrangement.

1. The ruins along the upper course of the Rio Colorado and its tributaries, from the Virgin river.

2. The ruins of the Rio Grande and its tributaries.

3. The ruins of the Gila river and its tributaries.

He classifies the various remains, topographically, as follows:

1. Ruins in the valleys, on the plains, and on the plateaus.

2. Ruins in caves in the walls of the cañons.

It is probable, however, that a more correct idea of the different types will be obtained by the reader from a slight modification of Mr. Holmes's classification, thus: 1, settlements or villages in the valleys and on the plains; 2, settlements or villages on the high plateaus or mesas; 3, cliff-dwellings, consisting of single or communal houses built in the openings, shelves and rock-shelters in the cliffs; and 4, the cave-dwellings hollowed out, in most cases artificially, in the face of the cliffs. That the sites selected for,

and mode of constructing the last three, were with a view to security against attack, and greater probability of successful defense, seems apparent.

Cave Dwellings, or Artificial Cavate Abodes.

These, so far as discovered, occur chiefly on the west side of the Rio Grande, between Santa Clara and Cochiti, a stretch of some seventy-five or eighty miles; and in the San Juan valley, especially in the section above the mouth of the Rio Mancos. The elevated portions of the former section are composed chiefly of a yellow volcanic tufa of coarse texture, sufficiently soft and yielding to be readily carved or worked out with the stone implements possessed by the ancient inhabitants. The cliffs rise perpendicularly to the height of from fifty to two hundred feet above the sloping talus or debris which extends downward to the bottom of the cañons. It is in the lower part of these perpendicular cliffs the former inhabitants hollowed out their dwelling-places like so many hermit cells.

The process of forming these strange abodes appears, from the indications, to have been about as follows: The doors, which are usually somewhat square, were first cut into the face of the cliff to the depth of about a foot, then the work of hollowing out the room began. This is generally oval or irregularly rounded, about twelve feet in diameter, and only of sufficient height at the lowest point to permit a full-grown person to stand upright. The inside was excavated by scraping grooves several inches deep at intervals of several inches, and breaking out the intermediate portion. In this way the work progressed until the

room reached the desired size. Along the inner walls of these rooms are little niches and recesses used as places for storing household articles, ornaments, etc. Generally there are small holes or mortises in the side close to the roof, from some of which the decayed ends of wooden beams still project. These were probably used, as is still the custom in some of the Pueblos, as poles on which to hang blankets and clothing or meat to dry. In addition to the door opening, the outer wall is sometimes pierced by one or two irregular holes which probably served as windows. Although there are abundant evidences in the blackened roofs of the use of fire in these dwellings, there are no fireplaces. In many cases there are rows of holes across the outside front, which received the ends of beams forming the support to balconies.

In addition to the foregoing description, it may be added that in some cases the roof is arched, and the doors narrowed at the top. In many of the caves examined there is a firm and level floor of fine, red clay; and on the sides the remains of a coat of plaster, consisting of yellow and red clay. The lower part of the walls is occasionally plastered in one color and the upper part next the roof in another, a broad, dark-brown stripe being the line of demarkation. In some cases, smaller caves are found back of a larger one, communicating with the main room by means of tiny doorways.

Although these caves usually open at the top of the talus or sloping debris which lies against the base of the cliffs, here and there are some situated higher up the face of the precipice, while below them are seen the hollows of former abodes from which the front

walls have fallen away. It is probable that in the latter case the front was built up of stone, as immediately at the foot of the cliff rough-hewn blocks are found. The face of a cliff showing the openings to these caves is seen in Fig. 73

From Mr. Holmes's "Report on the Ancient Ruins of South-western Colorado," it appears that the manner of walling up the front of the cave-dwellings, as here given (Fig. 73), is frequently observed along the bluffs of the Rio Mancos, where, in corresponding cliffs of shaly sandstone, there are many examples. The walls in many cases are well preserved, having a somewhat recent appearance, while all about, high and low, are others in various stages of decay. In one place a picturesque outstanding promontory is literally honey-combed with these cave-houses, the outer openings to, and apertures communicating between them, being of barely sufficient size to allow a person of ordinary propor-

Fig. 73. Manner of walling up the front of cave dwellings.

tions to pass through. On the brink of the promontory immediately above stands the ruin of a tower, undoubtedly bearing some relation to the people who, like swallows, had made their nests in the face of the cliff. As there were other towers on high points along the stream, it is probable they were used as lookout and signal stations, from which warning could be given in time of danger. Mr. Holmes visited and measured seven along the lower fifteen miles of the course of the Rio Mancos. He found that they ranged from ten to sixteen feet in diameter, the remains yet standing varying from five to fifteen feet in height. Near the mouth of the river is a double circle or rather two circles tangent to one another. The smaller, which is fifteen feet in diameter, is the tower proper, the standing portion being still from eight to ten feet high. The larger circle, about forty feet in diameter, appears to have been simply an inclosure, but for what purpose is unknown.

Cliff-dwellings.

Although this term, when strictly used, refers to those single or communal houses constructed in the shelves and recesses of the cliffs, yet we may include under it those dwellings which are built against the base of the cliffs.

These cliff-dwellings, or rather, as Nordenskiold remarks, "cliff-towns," are in some respects the most remarkable ruins of the south-west. They occur at various points throughout the Rio Colorado basin. Nearly all of the Mesa Verde ruins belong to this class; they occur along the banks of the Rio San Juan and in the cañons and valleys which open on

its north bank, and are reported further west in southeastern Utah in the now almost uninhabited region between the Rio San Juan and Rio Colorado. Although the regions west of the latter river have been but little explored, it appears that they are by no means uncommon there. Even the recesses in the vicinity of the Grand Cañon, whose mysterious depths were first described by Major J. W. Powell, do not appear to have been too gloomy and forbidding to afford the cliff-dwellers a home. Safety and security against some inveterate foe was apparently one chief object in view in selecting places for their abodes, yet there must always have been some reference to agriculture and a water supply.

Referring to a special locality, it may be said that throughout the entire length of the Mancos Cañon, and in all its subdivisions, fortress-like buildings have been erected of rough hewn blocks of sandstone in shallow recesses and on narrow ledges, often high up the cliffs in almost inaccessible situations. These structures, in consequence of their position under an overhanging vault of rock, are generally well preserved, though they have been abandoned possibly for several centuries, yet possibly in historic times. Not only the stone walls, but also in many cases, the beams of the floors between the different stories are well preserved. Even wooden articles, textile fabrics, bone implements, and other articles are often found amid the debris which fills the rooms. It is claimed that in this region alone there are as many as five hundred of these dwellings.

As there is but little variation in the general character of these ruins, a description of one or two ex-

amples will suffice to give a somewhat correct idea of the type. For this purpose a description by Mr. Holmes of buildings on two ledges of a cliff in Mancos Cañon is selected. They are at least eight hundred feet above the river, the lower five hundred feet of the height being the sloping debris; the remainder the cliff of massive sandstone full of wind-worn niches, crevices and caves. Within one hundred feet of the top of the cliff, set in a deep niche, with arched, overhanging roof, is the upper house, its front wall built along the very brink of a sheer precipice. Thirty feet below, in a similar niche, is the large house, with a long line of apertures. A section of the cliff showing the position of a dwelling, though not the one described, is given in Fig. 74.

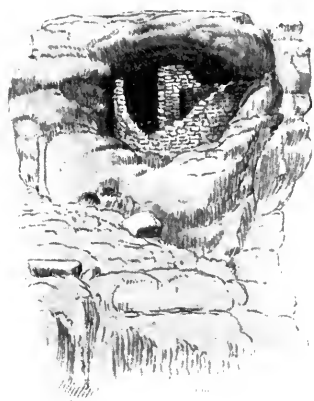

Fig. 74. Cliff-dwelling on the Rio Mancos.

The lower house occupies the entire floor of a niche sixty feet long, running back fifteen feet at its greatest depth. The front walls are flush with the precipice, and the partition walls extend back to the rock behind. Portions of the walls have fallen away, but the main building, which contains window-like openings, is still thirteen or fourteen feet high. The arrangement of the rooms of the left portion is somewhat complicated, the most striking feature being a circular room. The estufa or ceremonial room was

something, as it would seem, their exacting superstitions could not omit, howsoever great the danger which threatened them, or whatever might be the cost of labor and convenience. The inside of this room is curiously fashioned, with offsets and box-shaped recesses. It is plastered smoothly; and the entrance to it from the left is through a walled and covered passage of solid masonry, so small, however, as to necessitate abject crawling in order to pass through. The partition walls between the rooms do not appear to have been built up to the rock overhead. The apertures in the front wall are about five feet from the floor, and may have been intended for some other purpose than as windows, as they are comparatively small.

By digging, the explorers found, in one of the small rooms to the left of the circle, a large earthen vessel, and in the larger room opposite, another of the same kind. These were of the corrugated or coiled type. Beneath the vessels, spread out on the floor, was a large piece of rush matting, and beneath it a quantity of fine vegetable tissue, made from the interior bark of some tree.

The rock between this ruin and the one above is smooth and vertical, the only access to it being by a stairway cut in a narrow sloping face at the extreme left, which terminates at the top in the very doorway to the dwelling. The position of this ruin is one, as Mr. Holmes terms it, "of unparalleled security both from enemies and from the elements." The almost vertical cliff descends abruptly from the front wall, and the arched roof of solid stone projects forward some fifteen or twenty feet beyond. The house occu-

pies the entire floor of the recess, which is about one hundred and twenty feet long and extends back only ten feet at the deepest point. The rooms in this case are all formed by partition walls running squarely back from the front, in which are doors for intercommunication. While digging in the rubbish, the explorers found in one place a quantity of beans, and in another, grains of corn.

In one of these houses, called the "Long House," from its long, straggling, semicircular form—situated partly on the sloping talus at the base of a cliff and partly in recesses—Mr. Nordenskiold found, according to the plan he gives, no less than fifteen estufas or kivas. At the extreme left is a triangular tower, the cliff forming one of the walls, which still stands at its full height of four stories, though the uppermost room is too small for other use than a place for storage. The building material consists of the same soft sandstone as the vault of rock. These stones, generally a little larger than ordinary bricks, and seldom too large to be handled without difficulty, are roughly hewn and cemented with mortar. The walls are about one foot thick. The ascent from story to story appears to have been by means of stones projecting from the walls, or strong pegs driven into the latter, as nowhere in these ruins, nor in any of this region, have remnants of ladders been found, though many wooden articles are well preserved.

As a rule, human remains are seldom found in connection with ruins of this class. However, in one instance, Mr. Nordenskiold was so fortunate as to discover the remains of eight individuals among, or in connection with, the ruins of a single cliff-dwelling.

This ruin of the Mesa Verde has received the local name of "Step-House," from the fact that a stone stairway leads upward from it to the top of the mesa. These remains were not found in the building, but in the space immediately adjoining, and appear to have been in shallow, oval excavations, barely of sufficient size to admit the body on its side after the knees had been drawn up against the breast. All appear to have been buried in this manner.

One of the graves contained the half-mummified remains of a child. It had been wrapped in a kind of feather cloth. A grave near that of the child contained the remains of an adult, which had been wrapped in matting made of osiers. Four earthen vessels had been buried with the corpse, one of which, a bowl, was turned over the head. There were also two other bowls and a mug. A third grave contained the remains of an adult completely mummified. The head had been covered with a skin cap and the feet with moccasins of the same material, and the body wrapped in a kind of net of cords, spirally wound about with strips of hide, on which the hair was still partly preserved when the grave was opened. The wrappings were further secured by strips of yucca leaf, under which thick bunches of cedar bast had been inserted. Under the body lay a mat of withes; the head rested on a short, rounded block of wood; another mat was spread over it. The grave in which it was buried was oval in form, as were all the others, and about two feet deep. In front of the face was a basket full of corn-meal, covered by a handsome bowl turned upside down over it. By the side of the basket lay a small ladle, or spoon, and between the two

a corn-cob. Both basket and meal were well preserved, the latter being of a slightly yellowish color and rather coarse. Some of the graves had been covered by placing round poles across them at intervals of a foot or so, and a heavier pole lengthwise over the middle of these. This was covered with a mat, on which was placed a broad flat stone, and the whole covered with a layer of earth about a foot in depth. All the skulls showed signs of artificial depression.

Of the articles unearthed at this locality we note the following, in addition to those mentioned: A large black jar; a bundle of reeds, probably intended for arrow-shafts; a large piece of flint of the kind used in manufacturing arrow-heads; a number of well-preserved ears of corn; a piece of cotton cloth; some woven baskets of yucca; pieces of a white, kaolin-like substance, wrapped in corn husks and lying in the bottom of a jar, probably used in the manufacture of pottery; the entire shell of a pumpkin.

If the articles mentioned were left by the occupants of this cliff-dwelling, their departure therefrom can not be dated very far back in the past. Although a dry climate, where decay was slow, as shown by the partly mummified bodies, the preservation of some of the articles mentioned for many centuries would seem impossible. However, before further comment, attention is called to the ruins on the plains and mesas, where we may suppose the people lived a more peaceful life, and in less apprehension of constant danger than is to be inferred from those described.

Ruins on the Plateaus and in the Valleys.

Throughout most of the Colorado basin, ruins of stone buildings are quite common. Although remains of single structures are occasionally seen, those of communal buildings or villages are of most frequent occurrence. Those of this class which have been most thoroughly examined and described by explorers are chiefly in the drainage area of the San Juan, as for example on the Mesa Verde, in or along the valleys of the Mancos, Las Animas and Rio de la Plata, at the Aztec Springs in Montezuma Valley and in the McElmo and Hovenweep cañons. It is also known that they occur on the wild plateau around the Grand Cañon, along the Colorado Chiquito, and in the region lying between the last mentioned stream and the San Juan; however, no descriptions of these have been published, nor is it known that any of them have been thoroughly investigated. According to Mr. Nordenskiold, to whom we are chiefly indebted for this summary, the western limit of the Pueblo ruins is the one hundred and thirteenth meridian, W.

A description of one of the most noted examples of the class, accompanied by an illustration, will perhaps convey to the reader a more correct idea of the type than any attempt at generalization. For this purpose we select Mr. Holmes's description of the ruins at "Aztec Springs," located in the depression between the Mesa Verde and Late Mountains, a short distance south-west from Cortez. The general plan is shown in Fig. 75, the whole group covering an area of about 480,000 square feet. The stone used is chiefly the fossiliferous limestone which crops out

along the base of the Mesa Verde, a mile or more away. As the amount of mason work is estimated by Mr. Holmes at 1,500,000 cubic feet, the transportation must have severely taxed the energies of a people who were themselves their only beasts of burden and

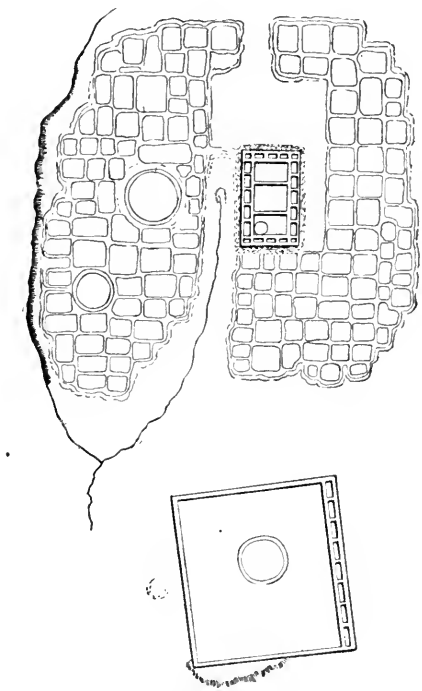

Fig. 75. Ruins at Aztec Springs.

means of conveyance. Nevertheless, the difficulty of transportation in this case, except as judged by the amount, was not so great as that necessary to fill an almost inaccessible recess, high up in the side of a precipice, with stone walls.

As will be seen by reference to the figure, there are

two groups of rooms, which, in the plan, look like the meshes in pieces of netting. Prominent in the village are two rectangular structures, one of which occupies a central position, while the other stands at a little distance on the outside. There are two circular rooms in the left group, and another in the larger square; these are depressed in the center and are undoubtedly estufas. The upper rectangular house measures about one hundred by eighty feet, and stands with the cardinal points to within five degrees. The remaining walls, which are still from twelve to fifteen feet high, are a little over two feet thick, built of roughly dressed stone apparently laid in mortar, and seem to have been double, with a space of seven feet between. A number of cross walls at rectangular intervals indicate that this space was divided into apartments, as shown in the plan. The interior space, which is somewhat depressed, was crossed, as is judged by lines of fallen stones, by two partition walls.

The network of fallen walls is so reduced that Mr. Holmes was at a loss to determine whether they formed a cluster of irregular apartments having low, loosely built walls, or are the remains of an imposing adobe structure, built after the manner of the ruined pueblos of the Rio Chico valley.

The lower house, which stands outside of the village, is two hundred feet in length by one hundred and eighty in width. The northern wall is double, the space between the two—about seven feet wide—being divided into rooms twenty-four feet long. The walls on the other sides are low and are supposed to have served simply to inclose the great court.

Near a dry wash that enters the St. Elmo from the south is another ruin similar in character to that just described. It seems to have been a compact village or communal structure, consisting of a great number of rectangular apartments and two circular buildings, or towers. One of the latter is especially interesting from the fact that it consisted of three concentric walls, the space between the two outer ones—about five feet in width—being divided into little rooms by cross wall, or partitions. One of these cross walls, still standing to the height of twelve feet, was pierced by a window-like opening some distance from the floor.

Villages of this type may be illustrated by reference to those still inhabited in the Moki (Hopi) section. Fig. 76 is the ground plan of one group of the village of Hano or Tewa as given by Mr. Victor Mindeleff in his "Study of Pueblo Architecture," Eighth Annual Report of the Bureau of American Ethnology.

Fig. 76. Village group, Arizona.

Another type, of which a number of important ruins have been discovered, is the true communal pueblo, consisting of one chief composite structure, semicircular or rectangular, surrounding two or three sides of an open or inclosed area. These structures consist of box-like rooms placed in three, four or five rows; the inner row next the inclosed area one story, the next two stories, and so on to the outer one, rising

in steps or terraces. One of these, semicircular in form, is shown in Fig. 77. The largest and most re-

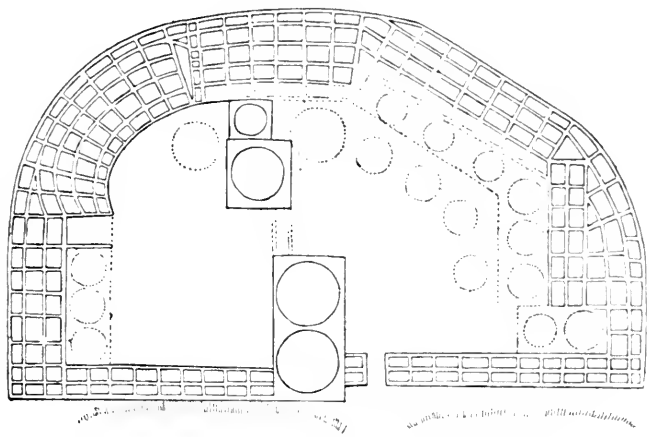

Fig. 77. Ground plan of the Pueblo Bonito.

markable structures of this class in the Colorado basin are situated in Chaco Cañon, which is drained by the Rio San Juan. That shown in the figure, known as Pueblo Bonito, is about 530 feet long by 308 in width. The arrangement of the rooms is not so regular in this instance as in some of the other pueblos. There are also indications here that the structure was not so large at first, but that two or more additions have been made to it, from which we judge that it was occupied for a considerable length of time.

If we compare the ruins in Chaco Cañon with the cliff-dwellings in Mancos, says Mr. Nordenskiold, we find several points of resemblance. In both localities the villages were fortified against attack: in Mancos, by their site in inaccessible precipices; in Chaco

Cañon, by a high outer wall, in which there were no doorways. Behind the outer wall, the rooms descended in terraces toward the inner court. One side of the court was usually protected by a semicircular wall. The roofs, which are flat in both sections, were constructed in the same way; the rafters, which formed the support, were often allowed to project beyond the outer wall as a foundation for a sort of balcony, and the doorways were nearly uniform in dimensions. The pottery strewn every-where in Chaco Cañon resembles that of the Mesa Verde. We are, therefore, concludes the writer, not without grounds for assuming that the works of the two classes are to be attributed to the same people, a conclusion generally concurred in.

CHAPTER XV.

THE GILA VALLEY AND CHIHUAHUA.

Passing to the basin of the Rio Gila and valleys of Chihuahua, we find that the character of the structures changes, as here adobe is the chief material used, while stone, as we have seen, is the material preferred in the more northern regions alluded to. Here the chief structure of a village was a building of more compact form, of which the Casa Grande, so often described and figured, may be taken as a type. The interior, consisting of three or four stories, is divided into rooms, one central in each story, or at least in the lower, and hence without light, except as filtered through the other rooms. The numerous ruins along the Salado, so far as the plans can be understood from the rubbish heaps forming the remains, appear to indicate structures of substantially the same type.

One of the best evidences of the somewhat advanced culture of the former inhabitants of this region is found in the works of irrigation in southern Arizona, so well described by Mr. F. W. Hodge (Am. Anthropologist, July, 1893). It appears from this paper that the ancient inhabitants of the Salado and Gila valleys engaged in agriculture by artificial irrigation to a vast extent. Judging by the remains of extensive ancient works, many of which may still be seen passing through tracts cultivated to-day, and

across densely wooded stretches, it is safe to say that the principal canals constructed and used by the former inhabitants of Salado valley supplied sufficient water to irrigate at least 250,000 acres. It is evident from this single fact that the people, who supplied themselves with food by such industrial means as are indicated by this extensive system of irrigating canals, were on the high road toward civilization. Yet the valley of happy homes was destined by some dire calamity, probably of savage warfare, to be turned into a desert.

Mr. Lumholtz found in the wild, rugged, uninhabited regions of the Sierra Madre numerous ruins usually built of stone and perched on mountain tops. Occasionally the buildings were surrounded by fortifications. Others also of stone were observed in caves. Some of these were three stories high, furnished with small windows and doors in the shape of a cross. Here and there were stone terraces built across narrow glens, obviously intended for agricultural purposes. Burial caves containing mummies were also discovered. These mummies, some of which still retained the hair and eyebrows, are of low stature, and bear a marked resemblance to the Moki Indians, who, as well as the Zunis, have a tradition that their ancestors came from the south. Some examples of the so-called "intrenched mountains" were observed by Prof. W. J. McGee during his visit to Sonora in 1895.

There are numerous minor ruins in north-eastern Sonora, but these are mostly comparatively modern, and apparently the remains of Indian (Opata?) villages destroyed by the Apaches. Near Carretas, in Chihuahua, there are ruins of ancient habitations which Mr. Bandelier, who examined them, thinks

present a different type from others mentioned. "The appearance," he says, "which these ruins present is strikingly different from that of any of those investigated by me in Sonora. They resemble the ruins on the Gila and Lower Salado, inasmuch as they consist of low mounds of white earth, indicating buildings larger and more substantial than those of Sonora, and connected with them were inclosures. The walls forming the latter were embankments of the same material as the mounds, with some traces of stonework. The mounds are about five feet high, and covered with all kinds of well-painted potsherds like those found in the ruins of north-eastern Sonora. Metates and crushing-pins, besides pottery, were the only manufactured objects noticed by me on the spot. There are faint traces of stone or rubble foundations on one of the mounds composing this cluster; otherwise it is clear that buildings and inclosures were of the same kind of white adobe as the walls at Casa Grande and other ruins on the Gila."

The noted and oft-mentioned ruins of Casas Grandes, or "Great Houses," are situated in the western part of Chihuahua on a small stream known as the Casas Grandes river. These lie chiefly on the southern extremity of a natural terrace which rises above the level of the river bottom, which is traversed by several gulches; some ruins, however, are found on the bottom land. They consist of the remains of walls, the larger portions of which have fallen and crumbled into heaps of rubbish. At some points, as at the corners and where supported by partitions, they were still standing a few years ago at a height of from two to three stories, varying in thickness from sixteen inches to four feet. Mr. Bandelier says the

structures are of the same make and pattern as those in the Tempe valley, described by Mr. Cushing, but with some exceptions are large and the doorways of quite good size. The air holes and apertures for light, which, perhaps, deserve the name of windows, are rectangular, round and oval. The lintels of the doors, as well as of the rectangular windows, were of wood, consisting of flat or half round pieces. The roofing was similar to that of the pueblos. The houses consisted of from one to several stories, and the remains of some indicate that the central portions were higher than the outer ones. The ground plan of the chief group is shown in Fig. 78, as given by Bandelier. Mr. Bartlett, who visited these ruins thirty years previous to the time Bandelier saw them, remarks that, from a close examination of what remains "of the building or buildings," he came to the conclusion that the outer portions were not above one story in height, while the central ones were from three to six stories. The walls, which appear to have been built of sun-dried blocks of mud and gravel, vary in thickness from sixteen inches to four feet. Scattered among the ruins are numerous household articles and utensils, and Mr. Bandelier says no place has

Fig. 78. Ground plan of Casas Grandes.

been dug into without metates, pottery and other articles of daily use coming to light. He describes as follows some structures which were enigmatical to him:

"There are structures which remain enigmatical to me. These structures lie west and north-west of the measurable portions of the ruins. They are solid, elliptical or circular mounds, of various heights, composed mainly of gravel. They suggest the idea of artificial platforms upon which buildings were to be erected; but I saw no traces of foundations, and the level on which they are situated is already higher than that of the great houses themselves. Nos. I and IV are still more peculiar; while the others are low, hardly over one or two feet high, I rises to an elevation of 3.5m. (11 feet). It has been excavated in the center, and the section shows nothing else but a solid mass of gravel. It is a mass of gravel with a rim of stones extending around its upper slopes at a few inches below the top, which is flat and thickly strewn with fragments of pottery. This artificial elevation is connected with a partly ruined inclosure, the interior of which is free from gravel, and was slightly moist. The inclosure consists of an embankment supported by a stone wall, similar to the dikes near Baserac in Sonora. The stone wall was built on the inner side, and the surface of the area thus inclosed is thirteen hundred square meters, or a little more than one-fourth of an acre."

The same writer remarks:

"Of all the objects found at the ruins of Casas Grandes, the pottery attracts the principal attention.

Not that it is any better than that found in the ruins of that section in general, for it is of the same make and type, but the number of specimens found in a good state of preservation is striking. The decoration on these vessels—I have seen but very few plain ones—derives its patterns from symbolic figures which are like those of the pueblos of New Mexico. In addition to the painted pottery, there is also plastically decorated ware, but all of this that I have seen is also painted. One jar showed very crude corrugations, but still was painted reddish brown; another kind of pottery had regular indentations carefully païnted in various colors. It may be remembered that, in speaking of the corrugated pottery found at Fort Apache, I said that it was painted, but without regard to harmony with plastic designs. Lastly, I have heard of pottery with human figures, colored in alto-relievo, but was unable to procure any specimen. I was assured that the figures are grossly obscene. Mr. Bartlett has given fair representatives of the Casas Grandes pottery. The shapes are like those of New Mexican pueblo pottery, with the difference that the bottoms are convex.

"The metates of Casas Grandes differ from others seen by me in the south-west in being much better fabricated, and even sometimes elaborately carved. They are generally square, and nicely finished, but I saw one of crude make. A double metate of lava was shown to me, and Mr. Bartlett has figured one with legs. Whatever crushing-pins I saw were prismatic, and not cylindrical, as they are further south. I noticed mortars of lava, fairly made, and one pestle, with the head of a mountain sheep rather well sculp-

tured. The last implement was of syenite. Stone axes are like the well-known instruments of the kind from Arizona. I heard of cotton cloth found in the ruins, and of threads of yucca fiber. I have seen many turquoise beads and ear pendants of turquoise precisely like those worn to-day by the Pueblo Indians or found in the ruins, also shell beads and many shells, entire as well as broken and perforated. The following species have been identified from the copies made by me in color: *Turritella Broderipiana*, a species from the Pacific coast; *Conus proteus*, probably from the West Indies; *Conus regularis*, from the West Indies; and a *Columbella*, locality not given. All the univalves found at Casas Grandes, as far as I know, are marine shells. The finding of such shells at a point so far away from the sea-coast, and nearly equidistant from the Gulfs of Mexico and of California, is a remarkable feature, implying a primitive commerce or inter-tribal warfare which carried the objects to the inland pueblo at Casas Grandes.

"Two interesting finds I still have to report. One is a fetich of the puma (*Felis concolor*), 'mountain lion,' or cougar. The specimen was of small size, apparently made of some kind of actinolite, and the figure was exactly like the fetiches of the mountain lion, called at Zuni 'long tail.' It might have been manufactured in New Mexico, so great is the resemblance. Another piece was only the head of the same animal, of larger size and of the same kind of stone. If the body was in proportion to the size of the head, the whole figure would have been as large as a small domestic cat."

Some of the structures of this group present an in-

terior arrangement (Fig. 79) which bears a strong resemblance to that of some of the Central American ruins.

Cave- or cliff-dwellings are found as far south as Casas Grandes. Mr. Bandelier says he heard them frequently spoken of in that region. Some remarkable ones are said to exist near the Piedras Verdes, about two days' journey from Casas Grandes. Some examined by Mr. Bandelier on the Arroyo del Nombre de Dios, about thirty-five or forty miles south-west of Casas Grandes, are in all their essential features similar to those already described. "In front of the rooms runs, almost along the precipice, a wall, which, near where the trail enters the cave reaches as high as the roof, thus forming a corridor with the walls of the apartments in the rear. Where the outer wall is lower, it is crowned with irregular battlements. In this purely protective or defensive exterior device, circular loopholes are so disposed as to command the trail." The inner walls were found to be well preserved and displayed more care and neatness in construction than those further north. The doorways resemble those of Casas Grandes except that they are smaller. It is worthy of notice that the one figured by Mr. Bandelier is without an estufa.

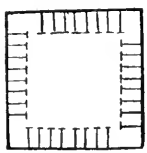

Fig. 79. Plan of Casas Grandes house.

In regard to the culture of this reigon, the author last quoted remarks:

"The ancient culture which flourished at Casas Grandes and in its neighborhood was similar to that which existed on the banks of the Gila and Salado in Arizona; the architecture especially is of the same

type. But at Casas Grandes there was a marked advance over any other portion of the south-west so far visited by me, shown particularly in certain household utensils, in the possible existence of stairways in the interior of houses, and in the method of construction of irrigating ditches. Nevertheless, the strides made were not important enough to raise the people to the level of the more southern tribes. Their plastic art, as far as displayed in the few idols and fetiches, remains behind that of the Nahuatl, Tzapoticas, Mayas, etc. They seem to have reached an intermediate stage between them and the pueblos, though nearer to the latter than the former."

The Builders.

It appears to be generally conceded that the modern Pueblo Indians are descendants of the cliff-dwellers and people who built the clustered villages on the mesas and plateaus which have been mentioned. But as yet no satisfactory attempt to trace their history back of the age of these structures has been made. It is known that they are a mixed race, that is, they pertain to different linguistic stocks. For instance, the Moki belong, at least in part, to the Shoshoni stock; while the other pueblos embrace the Kera, Tehua and Zuñi stocks. No relationship between the latter three or between either and any other tribes has been discovered. Mr. Hodge and some other students of ethnology of this south-western section believe that the Navajos, though like the Apaches, connected linguistically with the Athapascan or Dené stock, were at one time cliff-dwellers, and present considerable evidence in support of this opinion.

The origin of the cliff-dwellings and cave-houses, and the cause which brought about the dispeopling of these resorts and the thousands of clustered villages whose ruins are scattered over the Colorado basin and other parts of the south-west, is generally supposed to have been chiefly the relentless war waged against the people of these sections by the Apaches.

Major Powell (Thirteenth Annual Report of the Bureau of American Ethnology), after describing the physical features of the district, remarks as follows: "These geographic conditions, originating in clearly defined geologic processes, have affected the habitability of the tract since men first appeared therein—indeed, to these conditions the peculiarities of south-western aboriginal culture are to be ascribed in large measure." However, there is nothing in the ruins themselves to indicate a materially different climatic condition than the present, though man probably inhabited the region long before these structures were formed.

Mr. Hodge assumes that the selections of the village sites of the pueblos prior to 1680 were made chiefly with reference to their agricultural pursuits, which depended on irrigation, and that, so far as defensive motives were concerned, they related to inter-tribal broils, and not to security against the attacks of the Apaches, who, he thinks, did not enter upon the scene previous to the advent of the Spaniards. Mr. Cosmos Mindeleff, who has devoted considerable time to the study of the pueblo architecture, carries this view still further. Speaking of the ruins of Cañon de Chelly, he says:

"Here, if anywhere, we should find corroboration of the old idea that the cliffs were the homes and last refuge of a race harassed by powerful enemies and

finally driven to the construction of dwellings in inaccessible cliffs, where a last ineffectual stand was made against their foes, or the more recent theory that they represent an early stage in the development of pueblo architecture, when the pueblos were few in number and surrounded by numerous enemies. Neither of these theories is in accord with the facts of observation. The still later idea that the cliff-dwellings were used as places of refuge by various pueblo tribes, who, when the occasion for such use was passed, returned to their original homes, or to others constructed like them, may explain some of the cliff ruins."

He presents what appears to be conclusive evidence that some of the cliff-dwellings were constructed, or at least repaired, subsequent to the introduction of domestic animals, and hence, after the incoming of the Spaniards. However, there is, on the other hand, historical proof that some of the localities were deserted, and some of the pueblos in ruins, at the time of Coronado's expedition in 1540. There is nothing in the remains of the cliff-dwellings to show that as a class they are older than either of the other classes. Mr. Mindeleff is inclined to the opinion that the estufa or kiva, which is usually circular in form, is a survival of a more ancient custom, and not a development of this area. This was the sacred chamber, in which the religious and civil affairs of the tribe or band were transacted, and which also formed a resort for the males. Possibly it is represented in the more southern regions of the civilized tribes by inner chambers of the temples.

The presence in this region of some three or four small, distinct linguistic stocks is as yet an unexplained

phenomenon. Possibly this condition is due to the same general cause which forced so many small stocks to the coasts of California and Oregon. However, it seems more likely, if we may venture to offer a mere guess, that further study of the languages may lead to the conclusion that these groups are fragments broken off from other larger stocks, in the distant past, or remnants of those otherwise extinct. To what date the oldest evidences of occupancy of the region can be assigned, is a question to which no answer having any claim to general acceptance can as yet be given. There is such a uniformity in character, such a sameness in types, until we approach the borders of Mexico, as to indicate that they are due almost wholly to the physical conditions. All that can be said in regard to the antiquity of the works is that the oldest antedate by several centuries the incoming of the Spaniards.

Passing from Arizona into that part of north-western Mexico which is included in this section, we proceed some distance toward the south-east before any marked change in the archaeological types is observed; there is, however, a gradual modification of one and a fading out of the other. The aggregation of cells, which constitutes the true pueblo type, gradually fades out as we move southward, disappearing by the time we reach Casas Grandes, in Chihuahua. It is in this region, also, that the most southern examples of the cliff-dwellings occur, so far as known. On the other hand, the type, of which the Casa Grande in the lower Gila valley forms a somewhat rude example, becomes more and more prominent, undergoing such modifications as bring it nearer and nearer to the more stately structures of the southern region.

CHAPTER XVI.

MEXICAN SECTION—CIVILIZATION.

Having described briefly the known antiquities of north-western Mexico, which lie along the main route in that direction, and in a region occupied by the numerous small tribes of the Sonoran branch of the great Uto-Aztecan stock, we now enter what may be considered the Mexican or Central American section. It was in this section that native culture reached its most advanced stage in North America, that native talent made its nearest approach to the arts and culture of the Old World.

It is impossible, with our present imperfect knowledge of the antiquities, to determine with certainty the geographical range of this civilization. Bancroft designates the northern limit by "an irregular line extending across the continent from north-east to south-west, terminating at Tampico on the gulf and at the bar of Zacatula on the Pacific." However, it is sufficient for the present purpose to state in general terms that it extended over the southern half of Mexico and over Central America,* to and including Nicaragua.

This region, when first visited by the whites, was inhabited by the following stocks: the Nahuatl branch

* Although Yucatan and Chiapas are parts of the territory of Mexico, yet throughout this work we shall include them under the term "Central America," as distinguished from Mexico proper.

of the Uto-Aztecan family,* with southern and central Mexico as its chief locality, but with outlying branches in Guatemala, Nicaragua and San Salvador; and the Maya, occupying the peninsula of Yucatan and a large portion of Chiapas and Guatemala, with an outlying branch (Huastecas) on the Rio Panuco, north of Vera Cruz. These two were the leading and great stocks of this region. Next to these we might name, perhaps, the Zapotec-Mixtec stock, located chiefly in the province of Oaxaca. Besides these there were a number of stocks of limited extent, as the Otomies, in central Mexico; the Tarascos, in Michoacan; the Totonacas, in the state of Vera Cruz; the Chapanecs and their allies, chiefly in Chiapas, etc.

Although the question of the origin of this civilization will be briefly discussed in a future chapter, it is necessary, in order that the questions arising in regard to the ruins to be described may be understood, that some notice be given here of the character of this civilization, and that mention be made of certain important traditions which have been generally accepted as based on truth, though evidently fictitious in many of their details.

The pre-Columbian history of this region, which is given by the early Spanish authorities and their more recent collators, with abundant details, rests on confused traditions and questionable records, mixed with legendary and mythological relations, and is full of obscurity and doubt. Prescott, striving to find some

* This term is used in the sense indicated by Buschmann of relationship between Nahautl and Shoshoni linguistic groups. It is proper, however, to state that Major Powell expresses some doubt as to the sufficiency of the evidence on which this combination is based.

firm ground on which to stand, briefly summarizes as follows:

"Of these races, the most conspicuous were the Toltecs. Advancing from a northerly direction, but from what region is uncertain, they entered the territory of Anahuac, probably before the close of the seventh century. Of course little can be gleaned with certainty respecting a people whose written records have perished, and who are known to us only through the traditionary legends of the nations that succeeded them. By the general agreement of these, however, the Toltecs were well instructed in agriculture and many of the most useful mechanic arts; were nice workers of metals; invented the complex arrangement of time adopted by the Aztecs; and, in short, were the true fountains of the civilization which distinguished this part of the continent in later times. They established their capital at Tula, north of the Mexican valley, and the remains of extensive buildings were to be discerned there at the time of the Conquest. The noble ruins of religious and other edifices, still to be seen in various parts of New Spain, are referred to this people, whose name, Toltec, has passed into a synonym for architect. Their shadowy history reminds us of those primitive races who preceded the ancient Egyptians in the march of civilization, fragments of whose monuments, as they are seen at this day, incorporated with the buildings of the Egyptians themselves, give to these latter the appearance of almost modern constructions.

"After a period of four centuries, the Toltecs, who had extended their sway over the remotest borders of Anahuac, having been greatly reduced, it is said, by famine, pestilence and unsuccessful wars, disappeared

from the land as silently and mysteriously as they had entered it. A few of them still lingered behind, but much the greater number, probably, spread over the region of Central America and the neighboring isles; and the traveler now speculates on the majestic ruins of Mitla and Palenque, as possibly the work of this extraordinary people.

"After the lapse of another hundred years, a numerous and rude tribe, called the Chichimecs, entered the deserted country from the far north-west, They were speedily followed by other races, of higher civilization, perhaps of the same families with the Toltecs, whose language they appear to have spoken. The most noted of these were the Aztecs or Mexicans, and the Acolhuans. The latter, being better known in later times by the name of Tezcucans, from their capital, Tezcuco, on the eastern border of the Mexican lake, were peculiarly fitted, by their comparatively mild religion and manners, for receiving the tincture of civilization which could be derived from the few Toltecs that still remained in the country. This, in their turn, they communicated to the barbarous Chichimecs, a large portion of whom became amalgamated with the new settlers as one nation.

"Availing themselves of the strength derived, not only from this increase of numbers, but from their own superior refinement, the Acolhuans gradually stretched their empire over the ruder tribes in the north; while their capital was filled with a numerous population, busily employed in many of the more useful and even elegant arts of a civilized community. In this palmy state they were suddenly assaulted by a war-like neighbor, the Tepanecs, their own kindred, and inhabitants of the same valley as themselves.

Their provinces were overrun, their armies beaten, their king assassinated, and the flourishing city of Tezcuco became the prize of the victor. From this abject condition the uncommon abilities of the young prince, Nezahualcoyotl, the rightful heir to the crown, backed by the efficient aid of his Mexican allies, at length redeemed the state, and opened it to a new career of prosperity, even more brilliant than the former.

"The Mexicans, with whom our history is principally concerned, came also, as we have seen, from the remote regions of the North—the populous hive of nations in the New World, as it has been in the Old. They arrived on the borders of Anahuac toward the beginning of the thirteenth century, some time after the occupation of the land by the kindred races. For a long time they did not establish themselves in any permanent residence, but continued shifting their quarters to different parts of the Mexican valley, enduring all the casualties and hardships of a migratory life. On one occasion they were enslaved by a more powerful tribe, but their ferocity soon made them formidable to their masters. After a series of wanderings and adventures which need not shrink from comparison with the most extravagant legends of the heroic ages of antiquity, they at length halted on the south-western borders of the principal lake, in the year 1325. There they beheld, perched on the stem of a prickly pear, which shot out from the crevice of a rock that was washed by the waves, a royal eagle of extraordinary size and beauty, with a serpent in his talons, and his broad wings opened to the rising sun. They hailed the auspicious omen, announced by an oracle as indicating the site of their future city, and laid its foundations by sinking piles

into the shallows, for the low marshes were half buried under water."

Although Prescott's work has been superseded in some respects by the more critical investigations of subsequent years, he gives substantially a brief summary of the traditions divested of their mythological colors. Although the Toltecs are still looked upon by some scholars in the same light as represented by preceding historians—that is, as a distinct and real people known by that name—there is a general tendency to the opinion that there was no distinct tribe or people of this name, but that it refers to the ancestors of some one or more of the Nahuatl or Maya tribes. Dr. Brinton goes so far as to deny their historical existence, looking upon them as fabulous. "They have," he says, "hovered about the dawn of American history long enough. . . . It is time they were assigned their proper place, and that is among the purely fabulous creations of the imagination, among the giants and fairies, the gnomes and sylphs, and other such fancied beings which in all ages and nations the popular mind has loved to create."

Although it is undoubtedly true that much that has been stated in regard to them by the early Spanish writers is pure fable or mythology, yet the conclusion reached by Dr. Brinton is extreme and scarcely justified by the data, as there were beyond doubt people who were indicated by the term "Toltecs," people who did erect some of the works ascribed to them, people who were real and did in fact exist.

It may be that the term was applied originally to a community or tribe somewhat advanced in culture,

and afterward used to designate the authors of monuments whose builders were unknown. It is quite probable that it included the Mayas, though applied to the builders of works in central Mexico, without identifying them with this people. In other words, the term stands about upon the same basis as that of "mound-builders," as formerly used in reference to the ancient works and ancient people of the Mississippi valley. The latter, when thoroughly probed, have disappeared from view, and in their place we have the ancestors of the Indians found inhabiting the country. So it is with the Toltecs; when thoroughly probed, they fade from view and we see dimly some primary incoming branch of the Aztec people, or the Maya tribes on their way southward, or both. Clavigero, in his "History of Mexico," although hampered by the popular notion, attempts to consider them honestly and candidly, but the doubt upon his mind is apparent throughout the history given by him. After disposing of them as usual by the terrible calamities which befell them, he closes with these words: "These imperfect accounts of the Toltecs are all we think proper to be told here, omitting many fabulous relations introduced by other historians." They come upon the stage, and, having performed their role, pass off, to arise, however, phœnix-like, from their ashes in new forms and under new names. When they disappear suddenly, the Aztecs are brought upon the stage. As the former, though so cultured, disappear without any remnants of a language distinct from that of their successors, it seems more rational to consider the two people as one, or that they had passed on to be known thereafter as Mayas.

The question to be solved in regard to them is, "Who were they?" We are inclined, as will be seen further on, to agree with Mr. Bandelier in identifying them, in part, with the ancestors of the Mayas.

Desiré Charney is inclined to run to an extreme directly opposite to that reached by Dr. Brinton. Judging by his last work, "The Ancient Cities of the New World," he is disposed to see in every ruin of southern Mexico and Central America which shows any evidence of advanced culture the work of the Toltecs.

The Chichimecas are no longer considered a distinct people or tribe, the name having been applied, as is supposed, to the rude and uncultured people of central Mexico. Nevertheless, it is possible, notwithstanding this general conclusion of historians and linguists, that the term, as originally applied, had a more definite meaning, but to whom it was limited, if this be true, can not be determined.

The civilization of this section of North America does not appear to have been limited by tribal or stock boundaries, but seems to have prevailed throughout the entire region, notwithstanding the fact that it was occupied by some seven or eight different stocks. It is true, there are minor differences in the types of the different districts inhabited by the different families, but there is such a general similarity as to convince the student that it is one civilization, having one origin, developed in one age or era, and that the cultures of the different districts are not parallel civilizations which have developed side by side, as maintained by Mr. Bancroft.

As evidence of this, we have only to refer to the

calendar system which prevailed throughout the entire region embraced in this section, and which formed one important and remarkable item of their civilization. This is of such a peculiar character as to forbid the idea that it could have developed independently in different districts. It is known to have been in use among the Nahuas of the valley of Mexico, and other tribes of the same linguistic family resident in Meztitlan, Soconusco, Guatemala and Nicaragua; that it prevailed among the Mixtecs and Zapotecs; that it was in vogue among the Totonacas of the state of Vera Cruz; the Pirindas, Tarascos and the Matlazincas of Michoacan; the Chapanecs of Chiapas and Nicaragua, and the various Mayan tribes in Central America. It is also known that it was in use among the builders of the ruined cities of Palenque, Copan and Tikal.

Briefly stated, this system was as follows: The year consisted of 365 days, divided into two unequal parts, viz., 360 days, or the year proper divided into eighteen months of twenty days each; and five intercalated days, which were added at the end of the eighteenth or last month, to complete the number 365. Each of the twenty days of the month had its own proper name; the numbering, however, was not from 1 to 20, but from 1 to 13, beginning again with the unit. It follows from this method that a day bearing both the same name and the same number will not recur until 13 months have elapsed. This gives a cycle or period of 260 days, which appears to have been more in use as a ceremonial or religious period than the secular year of 365 days. The days were

also indicated by symbols. The day symbols in use among the Mayas are shown in the usual form and order in Fig. 80, with the names attached. Those

Fig. 80. Maya day symbols.

Fig. 81. Mexican day symbols.

in use among the Mexicans are shown in Fig. 81. The names of the Mexican days in their proper order are :

1. Cipactli.
2. Ehecatl.
3. Calli.
4. Cuetzpallin.
5. Cohuatl.
6. Miquiztli.
7. Mazatl.
8. Tochtli.
9. Atl.
10. Itzcuintli.
11. Ozomatli.
12. Malinalli.
13. Acatl.
14. Ocelotl.
15. Quauhtli.
16. Cozcaquauhtli.
17. Ollin.
18. Tecpatl.
19. Quiahiutl.
20. Xochitl.

As given in the figure they are as follows, taking the upper line from left to right, then the second in the same way, and so on : first line, Ehecatl, Calli, Cuetzpallin, Cohuatl ; second line, Itzcuintli, Ozomatli, Malinalli, Acatl ; third line, Tecpatl, Quiahiutl, Xochitl, Cipactli ; fourth line, Miquiztli, Mazatl, Tochtli, Atl ; fifth line, Ocelotl, Quauhtli, Cozcaquauhtli, Ollin.

It follows, as a necessary result of this system, that without arbitrary change the years would always begin with one of four certain days, and no others, these four following one another in regular order.

There were other peculiarities of this system, but what has been mentioned is sufficient to convince the reader that the calendars containing these peculiarities, though found in use among the tribes of different linguistic stocks, must have had a common origin. It is also sufficient to show one phase of the civilization of the section now under consideration.

It is probable the calendar system grew out of the method of enumeration which prevailed among the same tribes. The numbers from 1 to 11 had distinct names; from 12 to 19 the count was by additions to 10, then followed 20 with a distinct name. Above 20 the count was based on the vigesimal system, 20, 40, 400 and 8000 being the multiples used as counters. It is therefore a just inference that the calendar system grew out of the numeral system, or the reverse.

The advance in agriculture corresponded in some degree to the progress on other lines, though not so great as in some. The increase in population and adoption of sedentary habits, the lack of fish-supplying streams and lakes, except in a few limited localities, and the diminution of game and lack of domestic animals, made it necessary to depend in a very large degree upon the products of the soil for subsistence. Maize, as among other aborigines of the continent, was the chief product and the chief reliance for food. Although the method of cultivation was comparatively rude, the people had learned the necessity of keeping the fields, which were usually small and scat-

tered, free from weeds, and of cultivating the crop. In the most advanced sections the fields were surrounded by hedges, ditches or fences, and irrigation was resorted to in dry seasons where practicable. The cultivation of cacao; maguey (aloe), cotton, beans, pepper and certain native fruits was also carried on extensively. This labor was deemed honorable, and in most tribes all except the soldiers, nobles and priests were employed in it; even the inhabitants of the cities were engaged to some extent in cultivating the soil. The work was, at least in some sections, chiefly done by the men. Bees were domesticated, from which both honey for consumption and wax for use in various arts were collected.

It is probable that the Nahuatl tribes had made greatest progress in the mechanical arts, excepting those relating to architecture. If the statements made by early writers, and repeated even to the present day, be accepted (though caution in this respect is suggested), the Mexicans may be said to have reached the age of bronze. Many weapons, utensils and implements were, it is said, manufactured of this alloy of copper and tin. Gold, silver, lead and copper were worked by founding and smelting into various articles of use or ornament. It is even affirmed that they could mix the metals in such a manner that the feathers of a bird or the scales of a fish, in their imitative objects, would be alternately of gold and silver. But it must be said that none of the objects showing this wonderful skill have been preserved as witnesses to the truth of the very doubtful statement. Nevertheless, it must be admitted, as shown by a study of the articles of gold and other metals of the province of Chiriqui, on the Isthmus,

that some of the ancient people of this southern region had discovered the art of casting metals in molds. It is in this southern region that the ceramic art appears to have reached its most advanced stage. However, that pottery was manufactured to a very large extent by the early inhabitants of southern Mexico, is shown by the vast number of sherds and broken vessels found about the ruins of Teotihuacan, in the vicinity of the City of Mexico, and at other points.

That the ancient people of this region had made considerable advance in the art of sculpture, covering a wide range of subjects, illustrating various styles of treatment and methods of execution, is shown by the numerous articles found among the ruins. Among the more important classes of subjects independently sculptured are the human figure entire, often of colossal size and profusely ornamented, animal forms, and compound and fanciful life-forms of endless varieties; these subjects are also embodied in cylinders, disks, masks, tablets, boxes, vases and ornaments. The number of sculptured objects in this section, including those destroyed, those hidden in the soil, and yet buried beneath the ruins, and those which have been discovered, must have been very great. Painting was another art in which the aborigines of this region had made remarkable progress. This is shown, not only by the few remaining pre-Columbian Maya and Mexican manuscripts, but also by the numerous partially obliterated designs on the walls of crumbling edifices. It seems to have been a common practice in some sections to finish certain important surfaces, such as lintels, door-jambs, etc., in elaborate designs, consist-

ing chiefly of life-forms more or less conventionally treated. They seem also to have taken delight in feather-work, which was carried, in some of the tribes, to the highest degree of perfection.

Some of the tribes, especially of the Nahuatlan and Mayan groups, had made a somewhat close approach in their symbolic or picture writing to true phonetic characters.

As we can not properly illustrate the Mexican hieroglyphs or symbols without the introduction of colored drawings on a scale too large for our page, brief reference will be made only to the Maya hieroglyphs.

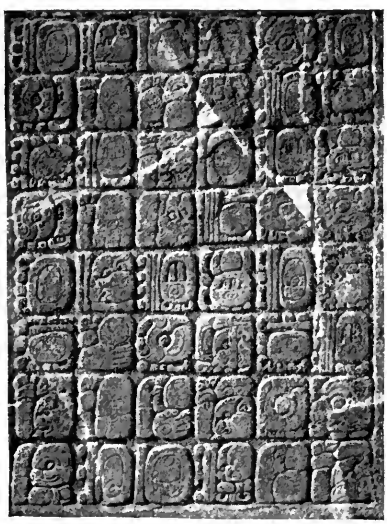

Fig. 82. Part of the inscription of the Tablet of the Cross, Palenque.

The example shown in Fig. 82 is part of the inscription on the right slab of the Tablet of the Cross, at Palenque. Notwithstanding the fact that but few of the characters have been determined, the direction in which the inscription is to be read is known. It begins with the large symbol in the upper left-hand corner of the left slab. This covers the space of four symbols of the ordinary size. Each of the following seven, reading downward, covers two spaces, the whole being counted as two columns. The

third and fourth columns, in which the characters are separate, are read from left to right, two and two, or by pairs, from the top downward, and the fifth and sixth columns follow in the same order. The six columns of the right slab, the lower half of which is shown in the cut, are to be read in the same order.

Although the characters shown in the cut are too imperfect for critical study, a few can be determined and one or two important facts ascertained. For instance, it is known that the balls or large dots and short lines, mostly vertical, at the left of the characters, are numerals, each ball counting 1 and each line 5, thus one ball and one line 6; three balls and two lines 13, etc. The top symbol of the left column in the cut is an oval containing a kind of cross and four dots, and stands for the Maya day *Lamat*. The two lines and ball at the left denote 11. This is therefore the day 11 Lamat. The character immediately to the right—top of second column—signifies the 6th day of the month *Xul*. This falls on the 6th day of the 6th month of the year 10 Akbal, from which fact it is evident that the Tzental method of arranging the days of the month, which is the same as that of the Dresden Codex, was followed here.

The bottom symbol of the second column is 8 Ahau, that immediately to the right—bottom of the third column—is the day 5 Kan.

This will serve to illustrate the advance, though but little, made toward a solution of this inscription with the knowledge so far obtained of the symbols. It may be added that, besides the day symbols, the signification of several other characters denoting time periods has been determined, quite recently. These discoveries

will, as the author has proved, suffice to explain a considerable part of the inscriptions.

It is evident that the advance made by the Mayas toward true alphabetic writing was beyond that of mere conventionalized symbols, though they had not reached the alphabetic stage. That they had reached that stage where symbols were used to represent, to a certain degree, syllabic sounds, appears to be demonstrable. So far as can be judged by what has been ascertained, the manuscripts which have been preserved, are, to a large extent, religious calendars relating to religious ceremonies, observances in domestic pursuits, etc.

The form of government differed somewhat in the different tribes. The most advanced type was that of the Aztecs and Tezcucans, which may, perhaps, without exaggeration, be termed a well regulated monarchy. Descent was in the male line, the title passing from father to son, but not without certain conditions and limitations, as it seems that certain nobles or men of authority had the right to decide which of two or more brothers or nephews, where there was no son, should succeed to the sovereignty. In other words, the government was to this extent an elective monarchy. The election, however, was restricted to the family of the deceased monarch, but females were excluded.

In Yucatan the people were split into a number of independent states or tribes, each governed by its own chieftain. According to tradition, and it seems quite probable, these independent bodies, all speaking the same language, were the fragments of a powerful confederacy which had been broken up through dis-

sensions, about a century before the arrival of the Spaniards. The chieftaincy was hereditary, descent being in the male line. The real power, however, here, among the Mexicans, the Zapotecs, and apparently all the nations of the section, was in the priesthood, though nominally in the hands of the chief or sovereign, it was mostly exercised in accordance with the wishes and direction of the priests.

The art, however, in which the people of this section excelled and in which their advance in the scale of civilization is most apparent, was architecture. To-day, the chief reminder of the cultured past of the people of this region is found in the crumbling remains of their architecture, the ruins of temples, towers and other stately edifices.

Although we shall reserve our comments to be added as we proceed with the descriptions of some of the most noted examples of the different types of structures, the following statement in regard to the Mayan structures of Yucatan may be of advantage to the reader in drawing his own conclusion as to the structures mentioned.

"Some of the buildings are composite and show successive accretions or periods of growth, and this is true to a large extent of the greater buildings of most nations, but there are others that stand as perfect units of design, in which the conception must have been complete in every detail when the construction began, a master mind controlling the cutting and the placing of every stone. There may have been working drawings—and the people were certainly equal to the task of making them—but if there were none, the carrying out of the work without them must

be regarded as even more remarkable. The construction of such buildings as the palace at Uxmal and the Castillo at Chichen, indicates a mastery in architectural design well calculated to astonish the student of the half-crystallized culture of the American races in general. There can be but little doubt that when the work of building began in such cases, the ground-plan, elevation and constructive design were fully worked out, and the spacings and doorways, moldings and panels and all details of sculptured decoration were fully decided upon; and I should say that even details of the stone cutting, the number, width and angle of courses of masonry, were predetermined, as otherwise, with the complexity of form and the infinity of geometric detail characterizing the façades, utter confusion must have resulted." (Holmes.)

We also ask the reader to bear in mind the fact that the builders were without beasts of burden, wheeled vehicles, or metal tools—with the exception possibly of a few bronze implements among some of the Nahuatl tribes—which could have been used in their work.

CHAPTER XVII.

MONUMENTS OF SOUTHERN MEXICO.

Following the plan which has been adopted in the preceding chapters relating to the Pacific division, the order geographically in which the ruins will be mentioned will be from the north toward the south, the probable direction, as will hereafter be shown, of the chief movements of population in prehistoric times.

It is probable, notwithstanding Bancroft's statements in regard to the types of ruins known as "Los Edificios," at Quemada in the state of Zacatecas, that these, and possibly others north of his limiting line mentioned above, should be classed with those in the southern section or area of civilization.

These ruins, which are the most noted of the northern area, are located about thirty miles south of the capital of Zacatecas, and six miles north of Villanueva. The name Quemada ("burnt") is that of a hacienda about a league to the south-west of the ruins. The latter are known locally as Los Edificios. The first notice of the place is found in a history of Nueva Galicia written by Fr. Tello about 1650. He states that the Spaniards under Captain Chirinos, "found a great city in ruins and abandoned; but it was known to have had most sumptuous edifices, with grand streets and plazas well arranged, and within a quarter of a league four towers with causeways of stone

leading from one to another." As the ruined city he refers to was in the region of the modern town, Jerez, it may with little doubt be identified with Quemada.

The ruins are situated on a narrow, isolated hill, the summit of which forms an irregular plateau over half a mile in length and from two to five hundred yards in width. All the accessible points of the brow of the hill are guarded by stone walls. The interior surface, where uneven, is formed into terraces supported by walls of solid masonry. These terraces or platforms supported numerous edifices. On the lower part of the mesa is a quadrangular space, 200 by 240 feet, depressed about four or five feet below the surrounding surface and bounded by a stone terrace or embankment. At one point on the eastern terrace stands a round pillar six feet in diameter and eighteen feet high, and there are traces here of nine others.

Adjoining this inclosure is another quadrangular space similar in character, 100 by 140 feet, in which there are eleven pillars, a little less in diameter but of the same height as those above mentioned, which are supposed to have sustained a roof over the area. It is stated that Nebel found in the ruins a roof thus supported, made of large flat stones covered with mortar and sustained by beams.

Of the extensive group on the platform of the south-western base of the central height, only a portion has been definitely described. Here is a depressed inclosure one hundred and fifty feet square, bounded by a terrace wall three feet high and twelve feet wide, with steps up the middle of each side. Back of the terrace, on three sides, are walls eight or

nine feet thick and twenty feet high, the north side being guarded by the steep side of the cliff. In the interior, near the north side, is a pyramid about thirty-six feet square and nineteen feet high, built in five or six successive stages or steps (Fig. 83). In

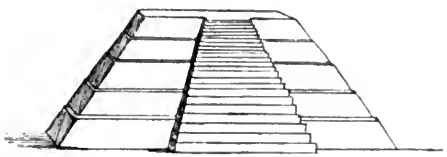

Fig. 83. Pyramid at Los Edificos, Mexico.

the center of the inclosure is a kind of altar or pyramid seven feet square and five feet high. The material of the works is chiefly gray porphyry. The stones, which are thin slabs not more than three or four inches thick, and not dressed, are laid in a mortar of reddish clay mixed with straw or grass.

As yet, no sculptures, hieroglyphics, pictographs, or architectural decorations have been found in these ruins, and, contrary to what would be expected, pottery, whole and in fragments, stone implements and burial deposits are entirely wanting.

Notwithstanding Bancroft's statement that the ruins of Quemada "show but few analogies to any of the southern remains," the reverse appears to be true, and we may add here that the importance of these ruins in the study of the rise and progress of native Mexican and Central American civilization does not appear to have been fully appreciated by authors touching upon the subject. Unfortunately, accurate

ground plans of the individual structures are wanting, but we see here the depressed quadrangular courts as at Palenque, Copan and elsewhere in the south; and the interior supporting columns as at Mitla and Teotihuacan. We also see here the intermediate terraced walls, as found in the south; and here, also, the pyramid assumes, though in embryo, the form common in southern Mexico and Central America. It is true that stone replaces to a large extent the adobe of the more northern structures, as at Casas Grandes and Casa Grande, but the thin, undressed slabs laid in mortar of clay and straw do not show a very great advance in masonry on that of the cliff-dwellings and pueblos. Nevertheless, the plan, extent and massive features of the ruins indicate an advance in culture. Notwithstanding his somewhat unfavorable comment, Bancroft makes the following admission:

"As a strongly fortified hill, bearing also temples, Quemada bears considerable resemblance to Quiotepec in Oajaca; and possibly the likeness would be still stronger if a plan of the Quiotepec fortifications were extant. The massive character, number and extent of the monuments show the builders to have been a powerful, and, in some respects, an advanced people, hardly less so, it would seem at first thought, than the peoples of Central America; but the absence of narrow buildings covered by arches of overlapping stones, and of all decorative sculpture and painting, make the contrast very striking. The pyramids, so far as they are described, do not differ very materially from some in other parts of the country, but the loca-

tion of the pyramids shown in the drawing and plan within the inclosed and terraced squares, seems unique. The pillars recall the roof structures of Mitla, but it is quite possible that the pillars at Quemada supported balconies instead of roofs; indeed, it seems improbable that these large squares were ever entirely covered."

It is true, as indicated in this extract, that the triangular arch, so common in the ruins at Palenque and elsewhere in Mayan territory, had not, as yet, come into use, or was unknown to the builders of "Los Edificios." But these structures are not unique in this respect, as will appear further on.

Interesting antiquities, some of them rivaling those at Quemada, have been discovered in Michoacan, Colima and elsewhere in central Mexico; cave-dwellings, pyramids of stone laid in clay mortar, temples and idols are reported; but the accounts are either insufficient to convey an intelligent idea of the ruins or unreliable.

Approaching the valley of Anahuac from the north, at the distance of some fifty or sixty miles from the City of Mexico, we come upon the small and unimportant town of Tula. Tula, Tulla, Tulan, Tolan or Tollan, as it is variously written, is, however, a name that is often repeated in the traditions and history of Mexico and Central America. It was here, according to the long-current opinion, that the Toltecs, coming from the north, fixed their capital, in the sixth century, A. D.

The ancient city appears to have extended over a plain intersected by a muddy river which winds

around the base of Mount Coatepetl, but a small portion of which is occupied by the modern town. The comparatively few antiquities which have been obtained from the immediate site have been found in clearing the river of some of its mud, or whilst plowing the adjacent fields. Among these are the fragments of three caryatides or sculptured columns, one of which is of black basalt and of giant proportions. This, which is seven feet high, represents only the legs; the body and upper portions are wanting, possibly were never present. This may have been a double column with an expansion at the base in the form of feet. The legs (or columns) are each one foot and three inches in diameter, and the feet four feet long.

Fig. 84. Sculptured column, Tula.

Parts of another column have been discovered here which present the unusual feature of having the pieces connected by joint and tenon. The sculpturing is clearly intended to give the column the appearance of the serpent's body. (Fig. 84, which shows the parts united and the whole theoretically in position.) According to Sahagun, there

were, at his early day, among the ruins of Tula, those of an unfinished temple called *Quetzali*, consisting of pillars in the shape of serpents, the heads forming the base. The latter feature, as will be hereafter seen, appears again in the ruins of Chichen-Itza, and is supposed to be indicative of the worship of Quetzalcoatl or his Mayan equivalent, Cukulcan. Desiré Charney, during his explorations of some tumuli on a neighboring hill, laid bare the foundations of two ancient dwellings. One of these consisted of twenty-four rooms, two cisterns, twelve corridors and fifteen little stairways. It seems that the floors of the rooms were mostly on different levels. The entire plateau of this hill, which is of considerable extent, was found to be covered with ruins of buildings, pyramids and other structures.

According to the author last quoted, the inner walls were coated with mud and mortar and in some cases stucco, while the outer walls were faced with large baked bricks and cut stone; the stairways were of brick and stone. It is supposed from the indications that the roofs were of wood and flat. Here and there closed up passages, walls rebuilt with materials other than those employed in the other construction, are taken as evidence that the place was occupied at two different periods, and possibly by two different peoples or tribes. According to Veytia, "On the Chichimecs invading the country under the command of Xolotl, they found Tula deserted, and grass growing in the streets, but the king was so pleased with the site that he ordered the monuments to be repaired and the town inhabited. He followed the same policy at

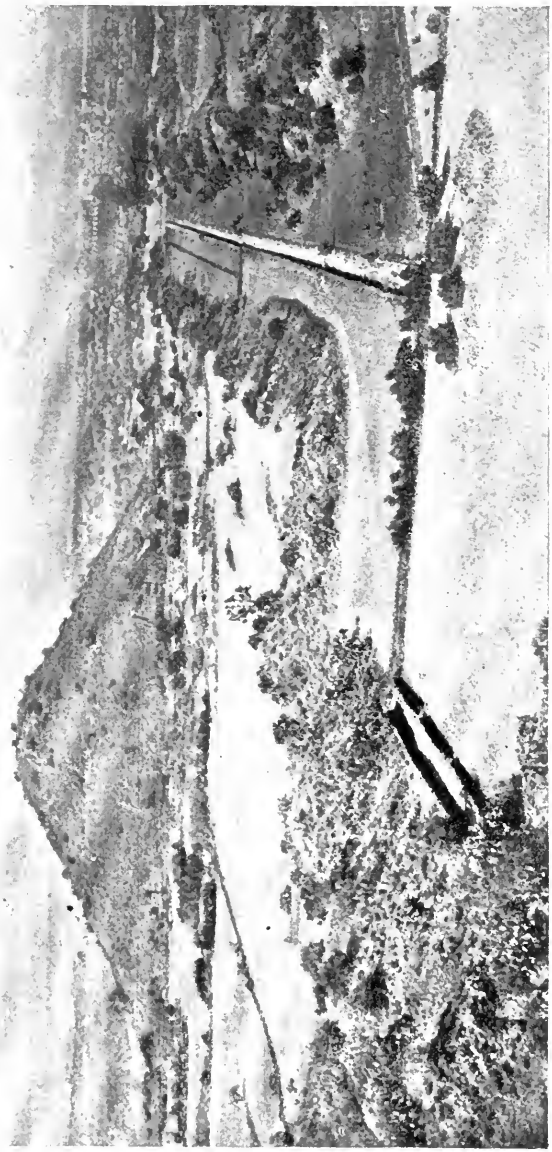

Fig. 85. View of the ruins at Teotihuacan, Mexico.

Teotihuacan and other places, ordering his people to preserve old names, and only authorizing them to give new appellations to those they should build themselves."

Continuing our course southward we reach the city of Teotihuacan ("City of the Gods"), about twenty-five miles north-east of Mexico. The ruins here, on account of their proximity to the capital, have been often visited by antiquaries and travelers and have been repeatedly and somewhat thoroughly described. According to the most recent description, in the magnitude of its remains and the evidence the site furnishes of population and antiquity, Teotihuacan stands easily at the head of the ancient cities of Mexico. It lacks the well-preserved sculpture-decorated buildings found elsewhere in Mexico and Central America, but this is doubtless due to the rarity of suitable building stone in this part of the valley. Cholula has a greater pyramid but lacks the multiplicity of attendant structures which here cover square miles of ground. The prominent features are the two great pyramids, that of the Sun, that of the Moon, and the Camino de los Muertos ("Pathway of the Dead").

A view of the principal ruins, from the Pyramid of the Moon, is shown in Fig. 85. The Pyramid of the Sun and the Citadel are seen in the background, and the Pathway of the Dead at the right. The Pyramid of the Sun is one of the most massive remains on the continent. With a square base, measuring between 680 and 700 feet on a side, it towers upward to the height of 180 feet, with a level summit of about 100 feet square. There were three terraces, each between

twenty and thirty feet wide, thus dividing it into four stories. Although remains of a zigzag stairway are said to have been observed on the east face, it is probable the real stairway was on the west side, thus giving a more direct ascent to the temple which tradition affirms crowned the summit, inclosing a colossal statue of the sun made of a single block of stone of which, however, no remains are at present to be seen.

The Pyramid of the Moon, though of less gigantic proportions than that of the Sun, measures between 450 and 500 feet at the base and is of proportional height. An important feature of the ancient city was the great court, some 600 or 700 feet square, lying at the south base of the Pyramid of the Moon and opening into the "Pathway of the Dead." The latter, a depressed way varying from 200 to 300 feet in width, extends southward a distance of over two miles, and is flanked on either side by an almost unbroken series of mounds and terraces ranging in height from ten to thirty feet. As it crosses the Arroyo of the San Juan, this must have been spanned in the time of occupancy by a bridge. The Citadel is a quadrangular inclosure 1350 by 1400 feet, the surrounding embankment varying in width from 100 to 180 feet and in height from ten to twenty feet. Each of the four lines of this embankment is surmounted by a series of four small mounds.

All classes of structure were built of irregular masses and fragments of lava and of adobe, the earth of the plains more or less intermingled with comminuted volcanic materials. Facings of important surfaces were sometimes of selected stone. "Hewn

stone," says Mr. Holmes, "was little used, and the laying of regular courses in mortar was not common." It is supposed that the roofs were flat and formed of wooden beams. Where the chambers were large, masonry pillars were built up to support the beams. These pillars, as exposed by Charney's exploration, were mostly square. The ground plan of the edifice unearthed by Charney, according to Mr. Holmes, is shown in Fig. 86.

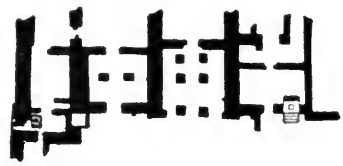

Fig. 86. Ground plan of Teotihuacan building.

The types and character of these ruins appear to indicate that they are to be considered pre-Aztecan—the work of a different and earlier people than the Aztecs. Mr. Bandelier says: "That the pyramids of Teotihuacan date from a period anterior to that of the Mexicans, or Nahuatl in general, results from the fact that no striking mention is made of them in connection with the specifically Mexican traditions. The place in the two centuries which preceded the conquest does not play a part corresponding to the magnitude of its ruins. This shows that the edifices were already abandoned at the time of the conquest." They are usually attributed by early authorities to the so-called Toltecs. Mr. Holmes says: "It is clear that the people, whatsoever their period or affinities, were intelligent, enterprising and powerful, and that their sway extended over a long period of years. The art remains indicate a culture differing decidedly from that of Tenochtitlan—the Aztec capital, now the City

of Mexico—differing in so many ways as to warrant the inference of a distinct nation; but, at the same time, the analogies are so close and numerous that the two peoples, if not of the same stock, must have been closely associated for a great number of years."

An enthusiastic writer, speaking of these ruins, says:

"If by an effort of the imagination we were to try and reconstruct this dead city, restore her dwellings, her temples and pyramids, coated with pink and white outer coatings, surrounded by verdant gardens, intersected by beautiful roads paved with red cement, the whole bathed in a flood of sunshine, we should realize the vivid description given by Torquemada: 'All the temples and palaces were perfectly built, whitewashed and polished outside, so that it gave one a real pleasure to view them from a little distance. All the streets and squares were beautifully paved, and they looked so daintily clean as to make you almost doubt their being the work of human hands, destined for human feet; nor am I drawing an imaginary picture, for besides what I have been told, I myself have seen ruins of temples, with noble trees and beautiful gardens full of fragrant flowers, which were grown for the service of the temples.'"

This, says Charney, from whom we quote, goes far to prove that the ruins are not so ancient as some writers maintain. Nevertheless, that the original plan and structures are to be attributed to other people than the Aztecs, is generally conceded; and that the place was in ruins when Torquemada visited it, is clear from his statement.

Fragments of pottery in great abundance, obsidian flakes, stone axes, etc., are scattered about the ruins; sculptured ornamentation is somewhat rare, but a massive stone idol complete and fragments of one or two more, also some other sculptured monoliths have been found.

CHAPTER XVIII.

MONUMENTS OF SOUTHERN MEXICO—CONTINUED.

Having now entered the civilized region, where ruins are scattered here and there over the country, we can only notice a few of the more important, and refer the reader who wishes to learn more of the details to the various works in which these are recorded. As the temples and palaces of Tenochtitlan, the capital of the Aztecs and the site of the present City of Mexico, remain only in the descriptions of the Spanish conquerors, and as the two or three horrid images and the supposed calendar and sacrificial stones which have been found have been often figured in published works and are probably familiar to most readers, we pass on to other points.

The ruins at Xochicalco ("Hill of Flowers"), about seventy-five miles south-west of Mexico, and fifteen miles south-west of Cuernavaca, are in some respects the most singular and include perhaps the finest monuments of the state. In the center of the plain rises an oval hill, about two miles in circumference and from three hundred to four hundred feet high. Two tunnels (or galleries) enter the side of the hill on the north, one of which has been traced to a depth of a little over eighty feet. The second, between nine and ten feet high, pierces the solid limestone of the hill, and has several branches running in different directions, some of them terminating in fallen débris, others apparently walled up intentionally. The floors

are paved to a thickness of eighteen inches with brick-shaped blocks of stone, and the sides are strengthened with walls of masonry wherever necessary. Both pavement and walls, as well as the ceiling, are covered with lime cement, which still retains evidence of having been painted with red ochre. The principal gallery, after turning once at right angles, terminates at a distance of several hundred feet in a large apartment about eighty feet long, in which two circular pillars are left of the original rock to serve as supports for the roof.

From one corner of the room opens a little rotunda, six feet in diameter, excavated, as the room itself, in the rock, the dome of which is in the form of a pointed arch. The outside of the hill is formed into five successive terraces, supported by walls crowned with parapets. The top or upper level, about 220 by 280 feet, supported a temple, or, more correctly, pyramid and temple (Fig. 87), measuring sixty-five feet

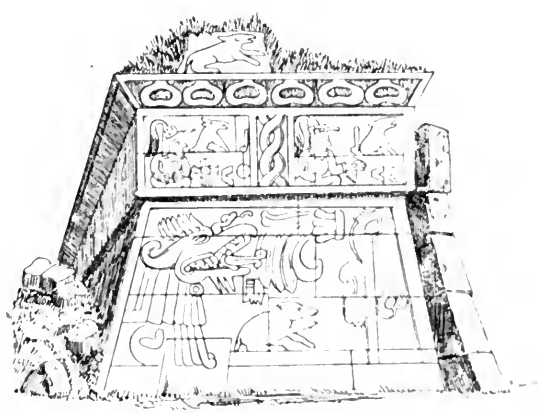

Fig. 87. Ruins of the temple of Xochicalco.

from east to west and forty-eight from north to south, constructed of porphyritic granite, dressed and laid without mortar. The part shown in the figure is probably only the basement. There were originally five stories to the temple, rising step by step one behind another, which were to be seen as late as 1755. The numerous figures on that part of the face shown in the cut indicate Mexican (Nahuatl) origin, and would seem to denote a different tribe or people from the builders of Tula or Teotihuacan.

The artificial caverns found here were, beyond any reasonable doubt, connected with religious ceremonies or superstitious rites, and would seem to be a survival of the similar custom already referred to as found further north. It may also be added that worship in caverns was practiced to some extent throughout Central America.

Before proceeding with our description of ruins, we quote the following from Motolinia, an early Spanish writer, in reference to the mode of constructing the Mexican mounds of worship:

"In the most prominent part of this court there stood a great rectangular base, one of which I measured at Tenanyocan in order to write this, and found it to be forty fathoms from corner to corner. This they filled up solid, stuffing it within with stone, clay, adobe, or well-pounded earth, and faced it with a wall of stone; and as it rose they made it incline inward, and at every fathom and a half or two fathoms of height they made a stage. Thus there was a broad foundation, and on it walls narrowing to the top, both by reason of the stages as well as by the slope, until at a height of thirty-four to thirty-five fathoms the

teocalli was seven or eight fathoms smaller on each side than below. On the west side were the steps by which to ascend, and on the summit were erected two altars close by the eastern edge, not leaving more space behind them than sufficient for a walk. One of these altars was on the right, the other on the left, and each one had its walls and roof like a chapel. The large teocallis had two altars, the others one, and each had its covered house. The great ones were of three stories over the altars, with their ceilings fairly high. The base also was as high as a great tower, so that it could be seen from afar. Each chapel stood by itself, and one might walk around it, and in front of the altars there was a great open space where they sacrificed."

About ten miles west of the Pueblo de los Angelos is the great pyramid of Cholula, so often mentioned by writers, the giant of its class. Although still standing, on account of the wear of centuries it is difficult to obtain exact measurements or to determine with certainty its precise form. The sides of the base, which was square, are variously estimated from 1440 to nearly 2000 feet each. Bandelier gives the perimeter at 7740, and estimates the height at 165, others at 175 to 200 feet. It consisted of four terraces or stages, probably of unequal width, and, if Mr. Bandelier be correct, with apron-like extensions or platforms on the sides of the base. Here the material employed was chiefly adobe, with broken limestone, little pebbles, and occasional particles of lava. Limestone broken into slabs was used for steps and stairways, and "pulverized carbonate of lime, mixed with pebbles and lava fragments, for the intervening ledges

and the coating of the stairways." The indications are that the structure was not erected at one time, but is rather an accumulation of successive periods.

Although it is known that it was surmounted by a temple, possibly of small size, and was a place of worship, yet Mr. Bandelier, who devoted considerable time to the study of the locality and its history, is of the opinion that it was, at least in part, a defensive work. He declares also that "one thing seems certain, namely, that the Nahuatl did not construct it."

Continuing southward, we enter Oaxaca, the region of the Zapotecs and Mixtecs, a stock distinct, linguistically, from the Nahuatl or Maya, and embracing besides these two tribes some other small tribes of the same locality. Though distinct from the Mexicans, the two peoples had many customs in common. The former were quite as highly civilized as the latter; they offered human sacrifices, and their mode of worship and rites appear also to have been in general analogous to those of the Mexicans, as were their dress, ornaments and weapons, and their warlike organization. Their calendar, the outlines of which have been preserved, was based upon the same theory as that of the Mexicans and Mayas, as was also their system of enumeration.

The ruins of this region, which are numerous and somewhat extensive and important, although resembling to some extent those of southern Mexico which have been noticed, and indicating a similarity of culture, constitute a distinct type. Space, however, will permit us to notice but the single group at Mitla, although the groups at Monte Alban show great quadrangles surrounded by walls inclosing series of

mounds, plazas and depressed courts, and outer series of terraces—reminding us, in some respects, of the ruins of Copan, and evidently marking the site of a large ancient city.

The site of the ancient city of Mitla is now occupied by the modern village of the same name. The ancient structures are better preserved than those of other groups of Mexico which we have described; but the ruins are not so extensive as those of Teotihuacan or as those of Monte Alban. But they are exceedingly interesting, and serve to illustrate the great progress made by the prehistoric people of this region in architecture, especially in the temple building art. The group consists of five great clusters of buildings, more or less perfectly preserved. Two of these are shown in Fig. 88. Mr. Holmes remarks as follows in regard to the general character of the works:

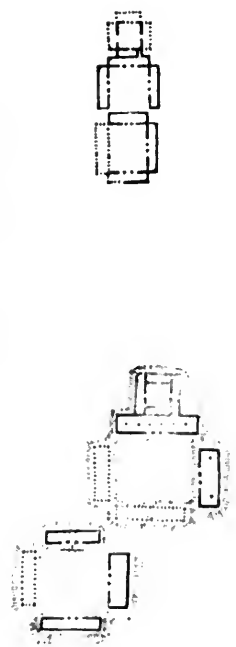

Fig. 88. Ruins at Mitla

"The art of Mitla, as represented by the architectural remains, was highly individualized, and hence presents many novel features—a result due in large part, no doubt, to the isolation of the people and the peculiarities of the environment. Many features of plan, profile, construction and finish are new to the student who has paid attention chiefly to Nahua and Maya building, and the system of embellishment seems to stand alone, even in the province

to which it belongs. The mural decorations are purely geometric, and in appearance are in striking contrast with the mythological, life-form designs so prevalent throughout other sections of Mexico. Much has been said by various authors regarding the significance of these and other peculiarities of the architecture, and some have predicated upon them marked distinctions of race, but such characters of art, standing alone, have no great value as ethnic criteria.

"With respect to the mechanical perfection of Mitlan work in stone, it may be said that environment probably had much to do with it. The trachytes that surround Mitla break down in great blocks along the cliffs, and are the most tractable and easily manipulated of the building stones. Monte Alban furnished nothing but flinty quartzite and gnarled crystalline limestone; San Juan Teotihuacan had mainly the most intractable forms of basaltic lavas. Such rocks do not lend themselves to the pick of the quarryman and the chisel of the sculptor; otherwise these two cities would probably have contained examples of architectural achievement unequaled in America. Mitla is what it is largely because of the presence of inexhaustible supplies of superb and easily worked building stone—the soft, massive, yet tough and durable, trachytes."

One of the clusters was built of adobe brick, the others chiefly of stone, the facing of the walls, cornices, trimmings and ornamentation of cut stone, and the hearting or filling of the pyramids, terraces and walls of rubble, as was usual in the entire region. Mortar was generally used in laying the stone. Although such advanced art is exhibited in these works,

no traces of stairways have been discovered. The general ground plans of the buildings are seen in the figure (88). The walls are massive, being usually over four feet in thickness and carried up vertically, and faced with dressed stone or plaster; the inner faces are plastered or partly or wholly covered with geometric mosaic work. The buildings are all only a single story in height, the ceilings and roofs flat, having apparently been supported chiefly by wooden beams, the arch not being used, perhaps not known to the builders. Where the rooms or halls were of considerable width, a row of pillars or columns was planted along the middle, in order to furnish additional support to the roof. (Fig. 89.)

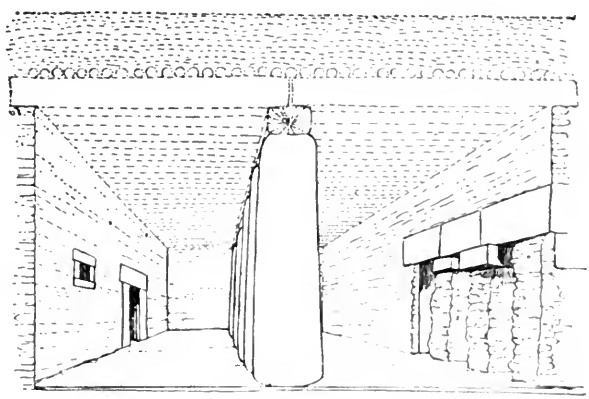

Fig. 89. Room with columns, Mitla.

The surfaces of the walls were uniformly covered within and without with some decorative finish. Three methods of embellishment were employed—painting, sculpture and mosaic. Mr. Holmes, whose

description is chiefly followed here, notices as something remarkable the absence of sculptured life-forms. "Sculpture in its more restricted and commonly accepted sense seems to have been tabooed as completely as if a priestly edict had been promulgated, forever prohibiting it. The absence of sculptured life-forms is especially remarkable, since such forms were most extensively embodied in other branches of Mitlan work."

The peculiar feature of these structures which has attracted most attention is the fretwork decoration of the walls. These designs are all purely geometrical, yet are varied and attractive, and are arranged in panels covering the exterior surface of the buildings, and on interior surfaces are in panels or continuous bands The most remarkable of these are geometric fretwork mosaics made up of separately hewn or carved stones in the form of little bricks set in mortar to form ornamental designs; some are angular and curved grecques (Fig. 90). The painted designs show a strong resemblance to the figures of the Mexican Codices, as Fig. 91. Charney seems to have a rather poor opinion of these paintings, as he says:

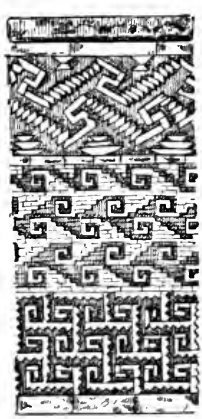

Fig. 90. Fretwork in the grand palace, Mitla.

"Below are found traces of very primitive paintings, representing rude figures of idols and lines forming meanders, the meaning of which is unknown. The same rude paintings are found throughout the

palace in sheltered places which have escaped the ravages of time. That such immature drawings

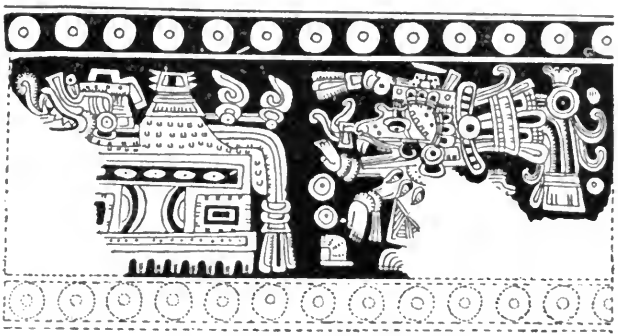

Fig. 91. Painted designs, Mitla.

should be found in palaces of beautiful architecture, decorated with panels of exquisite mosaic work, are facts which, at first sight, make it difficult to ascribe them to the same people."

According to Mr. Bandelier, the ancient pottery, so far as seen by him, was uniformly a light gray, thick and without traces of paint. Its ornamentation was overloaded, grotesque and elaborate, the faces often having noses exactly like the so-called "elephant trunk ornament of the Yucatec ruins, and enormous head-dresses encircling rather than crowning the face."

Nothing is known in regard to the age of these structures more than the fact that they were in ruins at the time of the Spanish conquest. Orozco y Berra thinks they were destroyed between 1490 and 1500 in the fierce contests between the Zapotecs and the Aztecs. The earliest known mention of the place is

by Motolinia, who says that when Fray Martin de Valencia went to Tehuantepec (about 1533) with some companions, "they passed through a pueblo which is called Mictlan, signifying hell in this language, where they found some edifices more worth seeing than in any other parts of New Spain. Among them was a temple of the demon, and dwelling of its servants (ministros), very sightly, particularly one hall made of something like lattice work. The fabric was of stone, with many figures and shapes; it had many doorways, each one of three great stones, two at the sides and one on the top, all very thick and wide. In these quarters there was another hall containing round pillars, each one of a single piece, and so thick that two men could barely embrace one of them; their height might be five fathoms. Fray Martin said that on this coast people would be found handsomer and of greater ability than those of New Spain."

Charney says: "It will be apparent to the reader that the ruins at Mitla bear no resemblance with those of Mexico or Yucatan, either in their ornamentation or mode of building; the interiors have no longer the overlapping vault, but generally consist of perpendicular walls, supporting flat ceilings, so that it seems almost impossible to class these monuments with those of Central America. Nevertheless, there are details which recall Toltec influence, as we shall show later." However, it must be apparent to the reader of this volume that there is a resemblance to some of those we have described in the following particulars: The absence of the vaulted ceiling; the use of the flat roof sometimes supported by interior columns; the partial use of adobe, apparently a survival of the

more northern custom; and the method of hearting or filling in the walls, terraces, etc The painted designs, as already stated, bear a strong resemblance to Mexican figures; and Charney admits that "some of the details, such as the masks and the small terra-cotta figures, are exactly like those at Teotihuacan, whilst the small crosses on the panels of the great palace, and those on the façade of the fourth, are facsimiles of those on the priest of Quetzalcoatl at Lorillard." The head-dresses of the pottery figures, if Bandelier be correct, are similar to those found in several other localities.

CHAPTER XIX.

MONUMENTS OF CENTRAL AMERICA.

Passing eastward to the vicinity of the Gulf coast, we enter the state of Tabasco, and after a brief notice of a ruin in this region proceed south-east in the direction of one of the supposed lines of prehistoric migration.

At Comalcalco is a group of ruins which, on account of their locality and character, are important in studying the prehistoric movements of population and the development of culture. These, according to Charney, from whom our brief notice is taken, consist of a large, irregular mound, or pyramid, and superimposed works. The latter include two quadrangular towers, a long building, so-called "palace," divided into two lines of rooms something like the Gobernador at Uxmal, or the north interior building of the Palenque palace, and two mounds which are probably the remains of structures of some kind. All, however, are in such a ruinous condition that it is difficult to make out with certainty the plans.

The palace, of which but a small portion retains the roof, shows the angular, slightly concave, vaulted ceiling, the sloping frieze, the slightly sloping roof and substantially the mode of structure seen at Palenque. From Charney's description, which is somewhat indefinite and incomplete, we quote the following: "The walls of the palace were without any ornamenta-

tion, save a layer of smooth painted cement; they rose perpendicularly nine feet to a very projecting cornice, then sloping in a line parallel to the corbel vault, they terminated in a second cornice less salient than the first, both serving as a frame to a frieze richly decorated, so far at least as could be ascertained from the fragments strewing the ground. Above this, toward the center of the roof, rose a decorated wall. . . . The building, including the walls, measures [in width] some twenty-six feet, the walls are three feet nine inches in thickness, the size of the apartments is about eight feet. The palace was brightly painted, as may yet be seen in the north corner, which is of deep red." He says that the ornamentation of one of the towers, of which portions of the wall are yet standing, "must have been gigantic; the fragment [of which he gives a figure] which was found among a heap of rubbish is no less than six feet. The figures or characters on the wall are over three feet high and in strong relief." His description leaves the reader in doubt as to the material used and composition; however, it seems to have been in part or largely adobe, as he mentions "the wall and its brick and mortar composition," and remarks, "If baked bricks mixed with thick layers of lime and mortar were substituted for stones, it is because none are to be found in that alluvial plain." Stairways are a feature not to be omitted in studying these remains.

Facing this pyramid to the north, says the author quoted, hidden by the luxuriant vegetation of a virgin forest, are three other pyramids, all crowned by temples, the walls of which are still standing. In one of these he was enabled to ascertain the sizes of

some of the brick used. These varied from 6 x 9 x 1 to 16 x 11 x 1, some used for the corners measuring 23 x 20 x 14 inches. Numerous other ruins in the same locality, of which no description is given, are

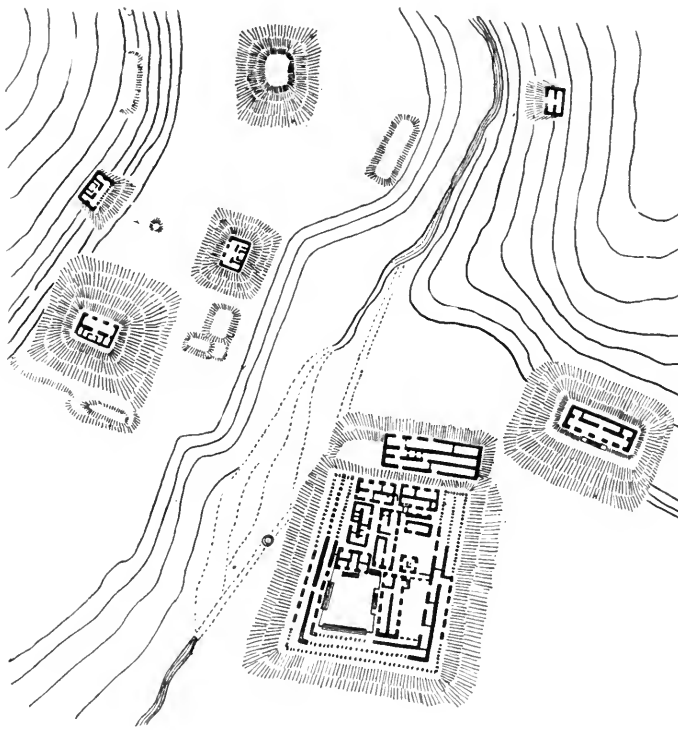

Fig. 92. Plan of the ruins at Palenque.

mentioned. The writer quoted believes that some of these structures were inhabited at the advent of the Spaniards; but without a much fuller and more accurate description no satisfactory conclusion on this point, nor as to their general features, can be formed.

Entering the valley of the Usumacinta, and moving up to the Tumbula foot hills, we come to the noted ruins of Palenque, of which so much has been said and written. As it is probable all the readers of this little work have read more or less in regard to the palace, temples and inscriptions of these ruins, only such features will be noticed as seem of most importance in their bearing upon the culture of the people and the relation of the art types of these structures to the types of other sections. Our space will permit no more than this.

The ruins consist of a number of pyramids crowned by buildings, supposed to have been used chiefly as temples; the larger one, however, has generally been termed "The Palace," from the supposition that it was the royal residence. A sketch map copied from Mr. Holmes's work—from which we shall chiefly draw our notice of architectural details—is shown in Fig. 92; in this the principal monuments of the group are indicated.

The palace, which is the large structure at the north (bottom) of the sketch is the chief object of interest in the group, and in its construction and details illustrates the considerable advance made by the builders in architectural art, though less profuse in ornamentation, less symmetrical in form and inferior

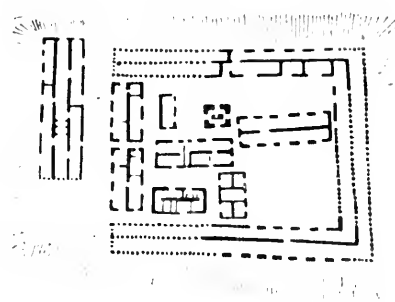

Fig. 93. Ground plan of the palace, Palenque.

in some other respects to some of the Yucatec structures which will be noticed hereafter. The ground plan of the building is shown in Fig. 93. This, as the other buildings, stands on a pyramidal substructure or elevated platform, in this case from twenty to thirty feet in height, and measuring at the top some 200 feet from east to west at the north end, and 225 from north to south. The lower terrace occupied by the building at the south end is about 40 feet wide and 180 feet long.

The structure on this platform is compound, the series of three broken lines around three sides and in the interior representing distinct buildings, while the spaces denote open courts depressed some five or six feet below the level on which the buildings around them stand. The square near the center is a tower. The building at the south end is on a lower terrace and not considered a part of the group on the upper level of the pyramid. All the buildings of the upper level, except the tower and that immediately south of it, are double vaulted, as shown in Fig. 94, which rep-

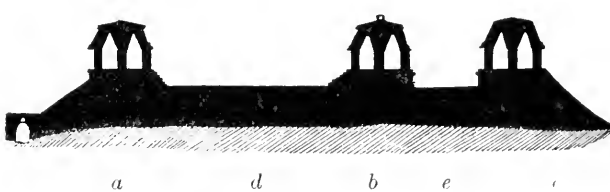

Fig. 94. Cross-section of palace at Palenque.

resents a cross-section of the northern part of the group; that marked *a*, the eastern range; *d*, the great court; *b*, the middle range; *e*, the northwestern court; and *c*, the western range. This

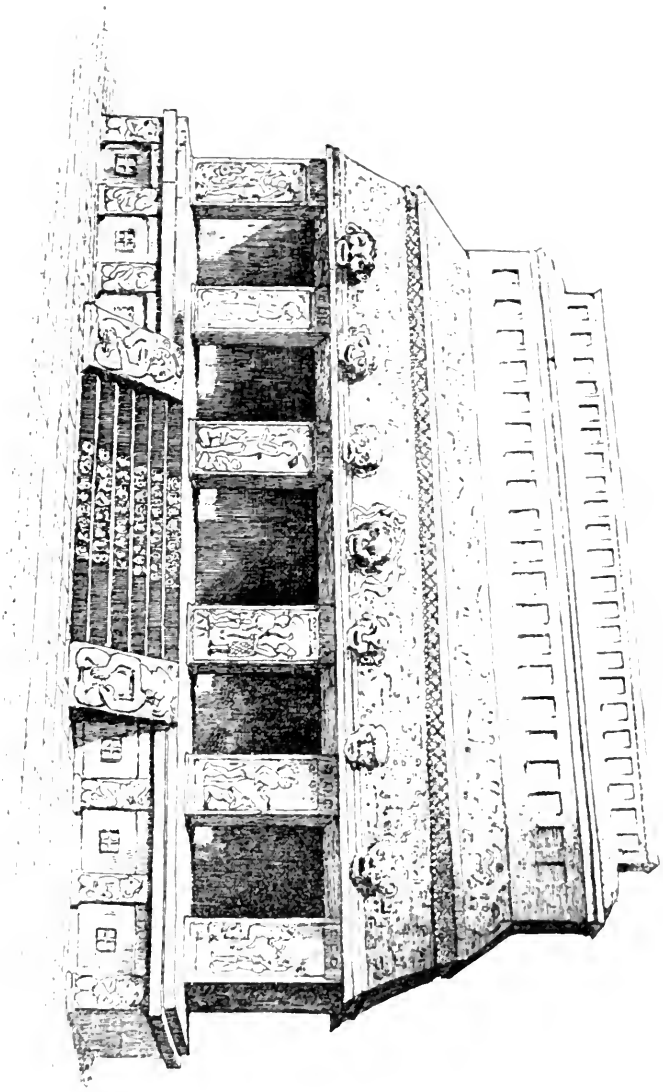

Fig. 95. Part of Palenque palace restored.

also shows the vaulted ceiling and the form of the roof. The walls are about three feet thick and rise vertically nearly ten feet. The roof is generally crowned with an elevated comb and the slopes filled with elaborate designs in stucco, as shown in Fig. 95, which is an attempted restoration of the roof of one of the interior palace buildings. The ornamentation is chiefly after Charney's idea, but the comb is given according to the author's view.

Large slabs are used in the construction of wall openings and the projecting portions of the roof. The outer wall of the surrounding building, that facing the great court on the east, and both outer walls of the interior building are broken into rather broad square pillars. Stephens says "the whole front [east face] was covered with stucco and painted; the piers were ornamented with spirited figures in bas-relief." Broad flights of steps lead up from the court to the buildings surrounding it. "On each side of the steps," says the author last quoted, "are grim and gigantic figures carved on stone in *basso-relievo*, nine or ten feet high, and slightly inclined backward from the end of the steps to the floor of the corridor."

The ground plans of other structures which are supposed to be temples, most of which are at Palenque, each mounted on a pyramid, are represented in a general way in our Fig. 96. The interior of the pyramids have not been examined, but from indications there can be little doubt that it consists of a heteroge-

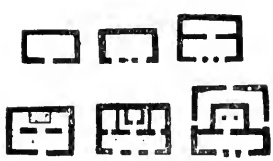

Fig. 96. Ground plans of Yucatec temples.

neous mixture of earth and stone. It would seem that the construction was, in some cases at least, carried up with vertical walls and the abutting masonry to form the slope added afterward, as at Copan. The platforms were, as a rule, finished in cement or concrete, but slabs of limestone were used in some instances. The support over the doors is believed beyond any reasonable doubt to have been wooden beams, though all had disappeared at the time of Stephens's visit.

A singular feature of some of the buildings here is the roof-comb. This, which runs lengthwise along the crest of the roof, is yet standing almost complete over the Temple of the Sun. It is in the form of a sharp inverted Λ, two feet wide within and twelve feet high. Its walls, which are three feet thick at bottom, thinning to two feet at top, are perforated in a varied and striking manner and finished at top with a slight molding; they are built of rather small stones well set in mortar. The faces and ends of this strange architectural device are entirely covered with bold mythological designs in stucco, and Mr. Holmes thinks that it was built for no other purpose than to display these figures.

As the strange, and, in some cases, remarkable figures carved in stone and modeled in stucco have been repeatedly published, and the hieroglyphics carved on stone tablets set into the walls have also been frequently reproduced, and have been referred to in a previous chapter, these, though interesting to the general as well as scientific reader, must be omitted here. Moreover, we deem it of more importance as a means of broad comparisons to give the archi-

tectural details relating to the forms and modes of construction.

The history of the city of which these ruins are the crumbling remains, and which must have been one of importance, and at some period one of power, is hidden in the gloom of the past seemingly beyond the possibility of recovery. This gloom is relieved only by a few faint rays cast by some dim and scarcely intelligible traditions, unless the city should yet be identified with the Izancanac visited by Cortez on his march to Honduras, a conclusion discountenanced by most historians and antiquaries, and advanced by but one of the explorers of that region. The Tzental tradition regarding Votan, their culture hero, and some faint and uncertain echoes from Quiche legends, are all that have come down to the present day in regard to its past. Like Quetzalcoatl of Mexican tradition, he comes from the eastern coast, clothed as were his followers in long gowns. Wives are given to his followers, and he is made ruler over the people who, up to that time, had lived in a savage state, knowing nothing of agriculture or architecture. He instructs them in these arts, forms their calendar, teaches them how to record events in hieroglyphic characters and builds the city of Nachan ("City of Serpents"), which, according to Ordonez, is identical with Palenque. Xibalba of the Quiche legends has also been supposed by some writers to refer to the same city, but, as Bancroft remarks, "the difficulty of disproving the identity is equaled by that of proving it." That the place was at some time in the past one of importance and one of influence among the natives of this region may be assumed from the ex-

tent of the ruins. However, it would seem that Charney is correct in considering it a holy place, a religious center, a city of temples.

"This important city is apparently without civic architecture; no public buildings are found; there seems to have been nothing but temples and tombs. Consequently, the great edifice was not a royal palace, but rather a priestly habitation, a magnificent convent occupied by the higher clergy of this holy center, as the reliefs every-where attest.

"Had Palenque been the capital of an empire, the palace a kingly mansion, the history of her people, fragments of domestic life, pageants, recitals of battles and conquests would be found among the reliefs which every-where cover her edifices, as in Mexico, at Chichen-Itza, and other cities in Yucatan; whereas, the reliefs in Palenque show nothing of the kind. On them we behold peaceful, stately subjects, usually a personage standing with a scepter, sometimes a calm, majestic figure whose mouth emits a flame, emblem of speech and oratory. They are surrounded by prostrated acolytes, whose bearing is neither that of slaves nor of captives; for the expression of their countenance, if submissive, is open and serene, and their peaceful attitude indicates worshipers and believers; no arms are found among these multitudes, nor spear, nor shield, nor bow, nor arrow, nothing but preachers and devotees."

Although the ruins at Comalcalco are so briefly and imperfectly described, yet this description is sufficient to indicate a decided similarity in some features in the mode of construction to those at Palenque.

Proceeding westward up the valley of the Usumacinta

into the mountain region of the Lacandons, the ruins described by Charney, and to which he has given the name "Lorillard City" (also called Menche), are reached. According to this writer, the number of buildings "in good preservation was supposed to be twelve," six, however, "without doors." They, like those at Palenque, are supported on terraces or pyramids faced with stones, have a central flight of steps, but are of smaller dimensions and not so richly decorated. But the description is necessarily incomplete, as all traces of outer decoration have disappeared. Here is found also the perforated roof-comb rising to an unusual height. The ceilings are triangular vaults, straight or slightly concave, and in some instances slightly convex, the latter being a feature not observed in the ruins heretofore described or in those of Yucatan. Lintels are more richly sculptured than in Yucatan, and seem to replace the slabs covered with

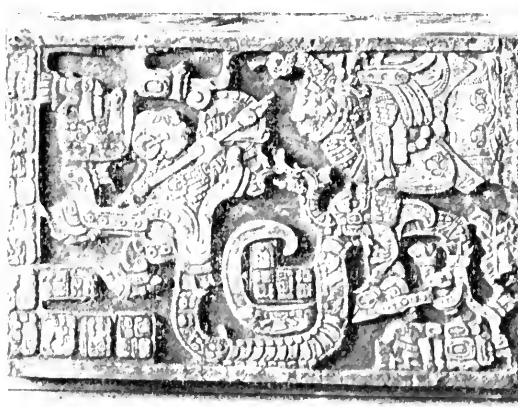

Fig. 97. Sculptured lintel, Lorillard City.

inscriptions and the ornamented pillars at Palenque. Casts of three of these obtained by Charney are in the United States National Museum. The figures are exceedingly rich in ornamentation, one of which is shown in our Fig. 97, from photograph. One of the most singular objects discovered by Charney was a great stone idol with an enormous head-dress rising in the form of a fully spread fan. He says that it is "unique of its kind, for nothing like it has been found either in Tabasco or Yucatan." However, Mr. Bandelier states that some of the ancient pottery heads from the vicinity of Mitla have enormous head-dresses which encircle rather than crown the face, probably similar in type.

The explorer whose description has been followed appears to lean to the opinion that this city was inhabited for many years after the Spaniards landed on the eastern coast.

Turning now to the east, we enter the peninsula of Yucatan, a region dotted over with monuments showing the most advanced architectural art of North America. However, the description of a few groups will suffice to indicate the types. The people who occupied the peninsula at the coming of the Spaniards were the Mayas proper, and although split into numerous independent states, spoke the same language. These, of which as many as eighteen are enumerated within the bounds of the peninsula, were, as heretofore stated, the fragments of a once powerful confederacy, which had broken up about a century before the Spaniards appeared in their midst. Some of the cities, of which these ruins mark the sites, were found already in ruins, but some of them were still inhabited, though

soon abandoned after the conquerors appeared on the scene. Nevertheless, it is apparent that their golden era had passed, and that the inspiration which gave birth to the numerous temples and palatial structures had disappeared. Herrera states that at the fall of Mayapan (which he places in 1460), which is supposed to have been the capital of the confederacy, the conquering caciques took away all the books of the kind they had that they could obtain, for the instruction of their people, and on their return home erected temples and palaces, which is the reason why so many buildings were seen in Yucatan; that following the division of the territory into independent provinces, the people multiplied exceedingly, so that the whole region seemed but one single city. There are, however, few students who will believe that the numerous structures, whose ruins are now scattered over Yucatan, were built during the seventy or eighty years immediately preceding the advent of the Spaniards; nor will they believe the division into independent nations was conducive to the increase and prosperity of the people, especially in view of his statement, confirmed by others, that during some of these years the country was swept by tornadoes, some years by the pestilence, and during others by the devastation of contending armies and plundering bands engaged in internecine warfare.

One of the most interesting as well as most noted groups of the peninsula is that known as Uxmal, some thirty-five or forty miles south of Merida. This group consists, as shown in Fig. 98, of some five or six buildings, mounted, as usual, on platforms or pyramids, a tennis court, and some three or four

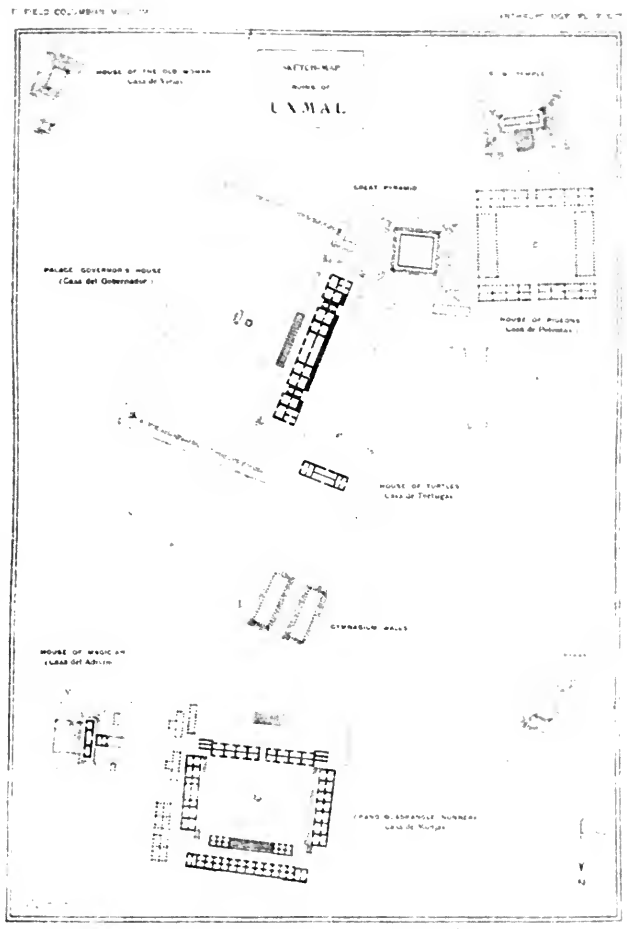

Fig. 98. Plan of ruins at Uxmal.

mounds, whose superstructures, if any ever existed, have disappeared. The area covered by the main group of ruins is not large, probably not more than half a mile

square, but scattered remains are found beyond this limit. "The place, when inhabited," remarks a recent visitor, "must have been extensive and important, and no doubt presented a brilliant and imposing effect. Though the buildings are now much dismantled and buried in a deep forest, save where recent clearings have been made, they are still impressive in the extreme, and it is difficult to realize that the huge pyramidal masses, rising like hills above the general level, are really wholly artificial."

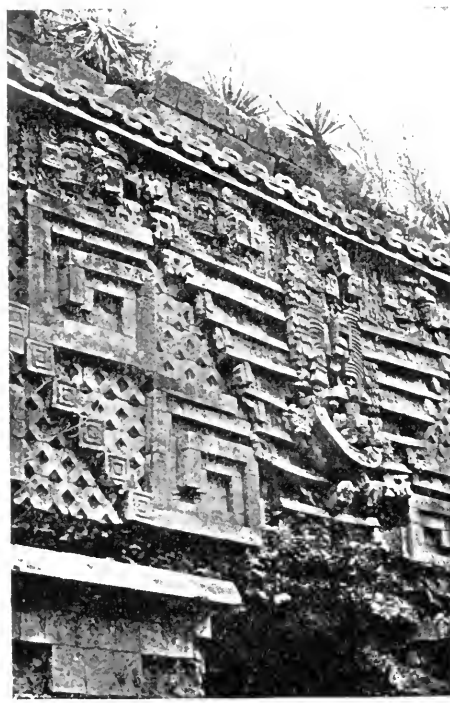

Fig. 99. Ornamentation on the governor's palace, Uxmal.

The Casa del Gobernador, or Governor's House, reared on the uppermost of three successive colossal terraces, and forming the large central ground plan in Fig. 98, is the most extensive, best known and most magnificent monument of Central America. The second of these terraces forms a broad esplanade in front of the building; the third, set back somewhat toward the rear, is long and narrow, so as to leave a promenade of thirty feet around the house. The latter is excessively long in proportion to the width, the length being about 325 feet, while the width is only forty feet. The height to the level top is twenty-six feet, nearly one-half of this height on the exterior face being occupied by an immense, profusely ornamented frieze, ten feet wide, running entirely around the four walls of the building, a distance of about 725 feet. This elaborate ornamentation (Fig. 99), which is all in wrought stone, consists of a checkered or lattice background; Greek frets, series of bars terminating with serpent heads, the interspaces being covered with hieroglyphs; human figures with immense head-dresses over the doorways (the human figures have all been broken away); and an upper line of great stone masks, with long, curved, proboscis-like noses. The other facing of the walls without and within is of the gray limestone of the region, in large, squarish blocks, generally cut and laid with great precision, and, with few exceptions, plain.

This long and narrow building is divided lengthwise into two series of rooms by a middle wall, the entrance being from the front; the rear wall is nine feet thick and without opening, except at the recesses near the ends. The width of the rooms is limited by

the span of the wedge-shaped arch of the ceiling which rarely exceeds ten or twelve feet. (Fig. 100.)

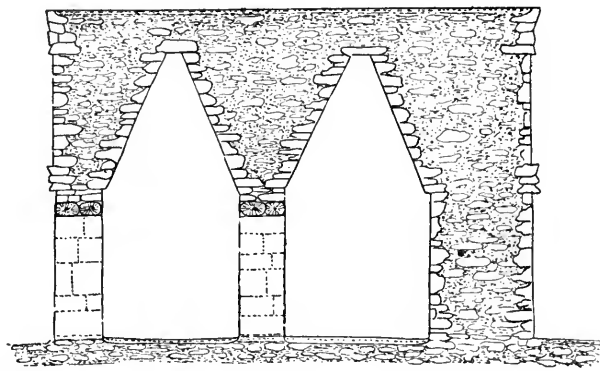

Fig. 100. Section of the Casa del Gobernador.

The so-called Nunnery is a great quadrangle, consisting of four rectangular structures surrounding an open court, which stand on terraces, leaving open spaces at the four corners, the south building alone having an entry way through it. The inner façades facing the court have, on the upper part, like that of the Governor's House, a broad, richly-ornamented frieze reaching from the top of the doorways to the flat roof. These, in variety of designs and delicacy of finish, probably exceed those of the Governor's House. Among these designs the great snouted mask is prominent, being found on all the fronts, and on the north side is placed in vertical tiers of five or six at the corners and over alternate doorways. These masks are formed by the arrangement of minor features and are rectangular in outline. They are probably intended to represent the Tlaloc or rain god of

the Mayas; whether Itzamna or Cukulcan, is uncertain; the writer is of the opinion that the former is intended. (Fig, 101.) A similar arrangement of somewhat similar faces is seen in some of the designs of the north-west coast (Fig. 70); even the great nose is sometimes present, especially on their totem posts, but in the form of a bird's bill instead of the elephant or tapir snout. The upward curve in the mask snouts of Central America give the idea that it was derived in some way from the elephant form instead of from the tapir snout, which has a slightly downward curve. However, figures in the Dresden Codex evidently intended to represent tapirs have the snout curved upward fully three-quarters of an entire circuit.

Next to the masks the most important feature in the ornamentation of these façades is the serpent, the arrangement of which along the face and around the panels is considered a masterpiece of decorative sculpture, and brings to mind the introduction of the serpent in the sculpturing of some of the temples of Cambodia.

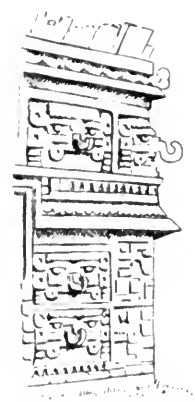

Fig. 101. Ornamentation of the Nun's palace, Uxmal.

As an entire chapter would not suffice to describe all the ruins of this ancient city, brief reference to but two more can be made here. The Temple of the Dwarf or Magician is noted as a prominent object of the group because of the very steep pyramid on which the building stands. The temple itself is small and insignificant; the unusual feature of the pile is a temple

built against and into the north side of the pyramid, its roof being on a level with the top of the pyramid. The front of this temple is about twenty-two feet square and is entirely covered with ornamental work. The large doorway is occupied by a colossal snouted face or mask twelve feet square, made up of striking and unusual details. Among these was probably a life-size statue (now lost) standing on the snout and resting against the forehead; others are a pair of tigers. The corner decorations comprise smaller masks, seven in each tier.

The House of Pigeons (Casa de Palomas), as will be seen by reference to the plan sketch, is a quadrangular structure placed against the terrace of a pyramid. Its prominent features are an arched opening of unusual size through the front building and the immense serrated, perforated comb which rises above the front wall.

The facing of the buildings is of cut stone; the filling of the walls and mounds is, as usual, of broken stone set in a liberal matrix of whitish mortar made of lime. "The facings and ornaments," says Mr. Holmes, "are all cut and sculptured with a masterly handling not surpassed where chisels, picks and hammers of iron and steel are used, and the faces and contact margins are hewn with perfect precision. Though the finish of the surfaces was often secured by means of abrasion or grinding, picking or pecking were the main agencies employed, and the indents of the tool are often apparent and wonderfully fresh looking."

This city is supposed to have been built or enlarged by the Tutul-Xiu—of whom further mention will be made in a future chapter—and their reign, with

Uxmal as their capital, was the most glorious period of Mayan history, probably extending from the early part of the twelfth century until after the fall of Mayapan. Why this city, the capital of the most advanced native culture, was abandoned by the Xiu, and Mani selected as their seat—which they occupied at the coming of the Spaniards—is unknown. That Uxmal was inhabited, at least to some extent, at the arrival of the Spaniards, appears to be proved beyond any reasonable doubt, and is generally conceded.

CHAPTER XX.

CHICHEN-ITZA, TIKAL AND COPAN.

Chichen-Itza, to which the reader's attention is now called, vies in the grandeur and extent of its remains with Uxmal. Like the latter, it is situated in the midst of a forest-covered plain, whose monotony is broken only by minor irregularities of the rocky surface. Its name, which signifies "The Mouth of the Well of the Itzas," is supposed to have been given because of the presence of two great natural wells or cenotes within its area. The principal ruins are included in an area considerably less than a mile square, and consist of half a dozen important piles, with remains of numerous inferior structures scattered about, which have not been explored. The pyramid-temple is the prevailing type, though some of the buildings are on the natural surface; the ground plans are mostly simple arrangements of corridors, vestibules and chambers; the walls are mostly vertical, the upper zone of the outer face ornamented, the lower portion plain; the roofs are level and covered with cement and the floors are mostly of cement. Ordinary surface masonry is often irregular, imperfectly hewn stones laid up with little skill; but important wall surfaces are generally faced with accurately hewn blocks, neatly laid, but with little mortar except at the back. Here, as elsewhere in Yucatan,

the wooden lintel was the weak feature of the construction.

"The study of even a single example of the great façades," says Mr. Holmes, from whom our notes on the architectural features are chiefly drawn, "is sufficient to impress upon one the vast importance of the sculptor's work, but the immense range of his field is appreciated when the heavy rattlesnake columns, the colossal serpent balustrades, the long lines of caryatid-atlantean figures, and the graphic relief sculptures of temple interiors and pillars have been passed in review. The life subjects had perhaps in all cases a mythologic origin and application, being employed in buildings or situations consistent with their symbolism. Purely geometric motives are numerous, important and highly varied and specialized, indicating on the part of this people a ripe experience in various branches of art in which the esthetic had equal consideration with the symbolic."

Although there was but little modeling in stucco here, plaster was universal; every imperfect surface was made even by this means, and then treated with colors which were varied and brilliant. The general plan of dividing the building into rooms with vaulted ceilings, as heretofore described, was followed here.

One of the most interesting remains of this group, in some respects, is the so-called Nun's Palace, a ground plan of which is shown in Fig. 102. This is in three stories; the lower stage, some ten feet high, although vertical, with moldings around the top and a narrow ledge around the bottom, is apparently solid. Ascent to the second and third stories was made by broad stairways in front, as shown in the ground

plan. The portion of the second story building supporting the small upper story is also solid, the filling up having apparently been an after-thought for the purpose of supporting the small upper structure.

The door jambs, lintels and rounded corners of the building are formed of stones of large size. Mr. Holmes thinks the most striking peculiarity observed here is the retreating profile of the upper wall, a character occurring rarely in Yucatec buildings, but almost universal in the Usumacinta province. This fact, as will be seen hereafter, becomes important in

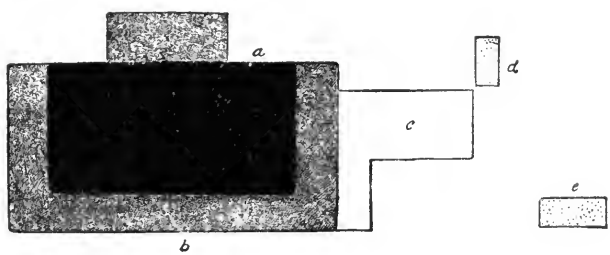

Fig. 102. Ground plan of Nunnery, Chichen-Itza.

tracing the development of art in this region. This building is also unique in regard to its decorations. The lower wall is elaborately embellished with geometric sculptures arranged in large panels. The large panels in the ends of the building are filled with heavy lattice work. The ornamentation of the upper story, as given by Charney, consists chiefly of panels with central rosettes.

This building has associated with it, as seen in the ground plan, an L-shaped adjunct, and two small detached structures, standing on the natural ground surface. The first of these—the adjunct—is about

twenty-three feet high. The lower portion of the outer face of the north and south walls has, alternating with the doorways, the usual mask and lattice decorations in panels, together with some plain spaces. The façade on the east is filled with two tiers of great snouted masks at the right and left of the doorway. The form of these snouts is shown in Fig. 103. The upper zone presents one of the most richly decorated spaces of its kind in America. The north side contains six mask panels, with three rosette panels; the east façade has a central panel over the door, in which is a sitting figure, and mask panels at the right and left. Even the flaring coping stones on the south front are embellished with three examples of, what are supposed to be, Tlaloc symbols as they embody the projecting snout and five or six pendant lines or grooves suggesting the rain god.

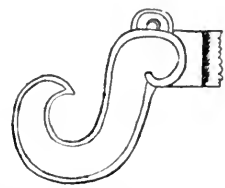

Fig. 103. Elephant trunk figure, Yucatan.

Another interesting ruin of this group is the Tower, or Caracol, so named because of a special stairway extending upward through the columnar, central mass of the building. It is mounted on the second terrace of a broad elevated platform, as shown in the vertical section, Fig. 104, which passes through the center.

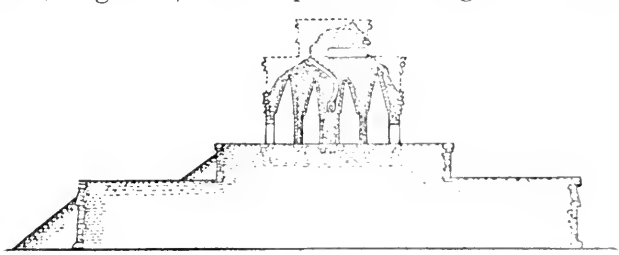

Fig. 104. Vertical section of the Caracol or Tower, Chichen-Itza.

The lower terrace is about twenty feet high and the upper one twelve. The tower is a regular circle about thirty-nine or forty feet in diameter, and when complete was probably about the same height. The ground plan is seen in Fig. 105.

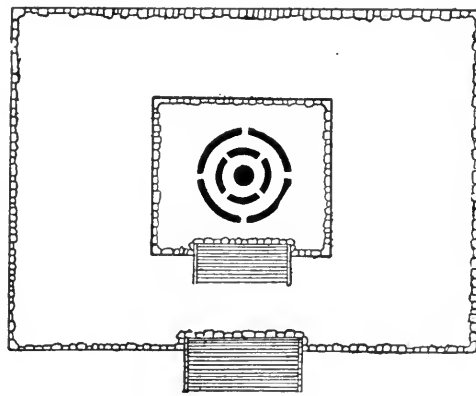

Fig. 105. Ground plan of the tower, Chichen-Itza.

The most imposing monument of Chichen-Itza is the so-called Castillo or Castle. This consists of a steep terraced, or stepped pyramid, seventy-five or eighty feet high, and a block-like superstructure. The sides of the pyramid rise at an angle of about fifty degrees, and are divided into nine steps; a broad stairway of hewn stone ascends the middle of each face. One at least of these stairways, and probably all, were bordered by a kind of balustrade representing a serpent, terminating at the base in a great serpent head with protruded tongue. The plan of the temple is of the usual form; a front entry extending the whole length of the building, from which a doorway leads into an interior dark room, around three sides of which runs a hall with doorways at the sides

and rear leading out of the building, but not connecting with the inner room. The great front opening is interrupted by two equally spaced columns which support the wooden lintel. These columns, which are circular, are carved to represent the body of a feathered serpent, almost exactly like those seen at Tula, the head being bent outward at the base. Columns of the same form are seen again in this group at the so-called House of the Tigers. The chief sculptures in the Castle are representations of the human form. These are elaborately costumed and have stern features. Some of the figures seen here are furnished with long, full beards. Two Atlantean forms are shown in Fig. 106.

The Gymnasium, House of the Tigers and other interesting monuments must be passed without notice in our necessarily brief account.

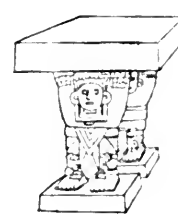

Fig. 106. Sculptured Atlantean figure.

In studying the ruined cities of Yucatan and attempting restoration, we should bear in mind the following statement by Landa, who was in that country as early as 1540: "Before the arrival of the Spaniards, the aborigines lived in common, were ruled by severe laws, and the lands were cultivated and planted with useful trees. The center of their towns was occupied by the temples and squares, round which were grouped the palaces of the lords and the priests, and so on in successive order to the outskirts, which were allotted to the lower classes. The wells, necessarily few, were found close to the dwellings of the nobles, who live in close community for fear of their enemies.

and not until the time of the Spaniards did they take to the woods."

The culture hero of Chichen-Itza was, according to tradition, Cukulcan, a name signifying "Feathered Serpent." According to Landa, it was said that he arrived from the west, but whether with or after the Itzaes was not stated, but probably after the city had been founded. According to the same authority, the principal edifice, built no doubt long after his departure, was named Cukulcan. It was through him the people obtained their arts, religion and mode of government. After ruling over Chichen for a time he removed to Mayapan and founded that city. At length he disappeared to be known and honored, as the tradition asserts, as the god Quetzalcoatl in Mexico. In Mayapan, a temple was built in his honor, as at Chichen, which Landa says was round, with four doorways. The fact that explorers have found at Mayapan and Chichen, and nowhere else in Yucatan, two circular temples entered by four doors, is seemingly a partial confirmation of this tradition.

The date of the founding of Chichen is of course unknown, yet the traditions, as shown by the author in his "Study of the Manuscript Troano," appear to indicate the sixth century A. D. as the probable date. However, as the place was inhabited, at least in part, at the coming of the Spaniards, it is probable that the structures, whose ruins now mark the site, were built long after that date. One destruction of the city is mentioned in the traditions. As will appear in a subsequent chapter, there are some reasons for believing that the Itzaes came to this locality from the Peten region further south.

As the remains of Palenque, Uxmal and Chichen-Itza indicate the leading architectural types of Central America, brief references only will be made to some of the particular features of the remainder of this district.

Extensive ruins have been discovered at Tikal, about twenty miles north-east of Peten, which are in some respects remarkable. One of the pyramids, including its superstructure of three stories, measured, according to Maudslay (probably up the slope), nearly 300 feet, which, with its fine wood and stone carvings, this explorer thinks "must have taken hundreds of active minds and thousands of skilled hands to have raised and perfected and kept in order." Here, as at Copan, some, at least, of the pyramids are carried up in great steps. Here also has been found the finest native wood-carving of America, so far as known. The chief features of this magnificent sculpture, which the size of our page will not permit us to introduce, are an enormous arched and profusely ornamented serpent, holding between its expanded jaws a human form with lofty head-dress; and beneath the serpent fold, a standing human figure with shield on the left arm and holding a staff or lance in the right hand. This figure is literally enveloped in ornaments. In the upper right and left-hand corners are several columns of hieroglyphs skillfully and accurately carved, among which can be easily recognized day symbols with numerals attached, showing not only the forms found at Palenque and in the manuscripts, though more ornamental, but indicating also precisely the same order in counting the day series.

The ruins at Quirigua, on Rio Motagua, eastern

Guatemala, which have been explored and described by Mr. Maudslay, may be briefly summarized as follows: Numerous square or oblong mounds and terraces, varying in height from six to forty feet, some isolated, others clustered in irregular groups, most of which are faced with worked stone, and were ascended by flights of stone steps. Some thirteen or more large carved monoliths, arranged irregularly around what were probably the most important plazas of the city or pueblo. Six of these monuments are tall stones measuring three to five feet square and standing fourteen to twenty feet out of the ground. Five are oblong or rounded blocks of stone, shaped so as to represent huge turtles or armadillos or some such animals. All these monoliths are covered with elaborate carvings; usually, on the front and back of the taller ones, there is carved a huge human figure standing full-face in a stiff and conventional attitude. The sides of these monuments are covered with tables of hieroglyphs, and in addition to these tables of hieroglyphs there are series of squares or cartouches of what appears to be actual picture writing, each division measuring about eighteen inches square, and containing usually two or three grotesque figures of men and animals. Some of the figures in these monoliths appear to be females. The hieroglyphs are of the same type as those already mentioned, the day symbols and numerals, so far as determinable, being similar to those at Tikal.

Hundreds of ruins, many of them interesting, are scattered over Chiapas, Guatemala and Honduras. Quite a number of these have recently been examined by Dr. Carl Sapper, whose drawings, showing the

ground plans of the structures, with brief explanatory notes, make it evident that they are, in arrangement and general character, substantially of the Copan type. For this reason, a brief account of this important type is given before closing the descriptive portion of our work.

These ruins are situated within the boundary of Honduras, some twenty-five or thirty miles directly south of Quirigua, a portion of the area being bounded by Copan river. Fortunately for students, a description of these ruins, written as early as 1576 by Diego de Palacio, has been preserved, which Mr. Maudslay, who has devoted much time in exploring the ruins, considers more than ordinarily trustworthy for the time it was written, as he remarks: "This description is such a one as might have been written by any intelligent visitor within even the last few years." It is as follows:

"Near here, on the road to the city of San Pedro, in the first town within the province of Honduras, called Copan, are certain ruins and vestiges of a great population and of superb edifices, of such skill and splendor that it appears they could never have been built by the natives of that province. They are found on the banks of a beautiful river, in an extensive and well-chosen plain, temperate in climate, fertile and abounding in fish and game. Amongst the ruins are mounds which appear to have been made by the hand of man, as well as many other remarkable things.

"Before arriving at them, we find the remains of thick walls, and a great eagle in stone, having on its

breast a tablet a yard square, and on it certain characters which are not understood. On arriving at the ruins, we find another stone in the form of a giant, which the elders among the Indians aver was the guardian of the sanctuary. Entering the ruins, we find a cross of stone, three palms in height, with one of the arms broken off. Further on, we come to ruins, and among them, stones sculptured with much skill; also a great statue, more than four yards in height, which resembles a bishop in his pontifical robes with a well-wrought miter (on his head) and rings on his fingers.

"Near this is a well-built plaza (or square), with steps, such as writers tell us are in the Coliseum at Rome. In some places there are eighty steps, in part at least, of fine stone, finished and laid with much skill.

"In this square are six great statues, three representing men, covered with mosaic work, and with garters round their legs, their weapons covered with ornaments; and the other two of women, with long robes and head-dress in the Roman style. The remaining statue is of a bishop, who appears to hold in his hand a box or small coffer. They seem to have been idols, for in front of each of them is a large stone, with a small basin and a channel cut in it, where they executed the victim and blood flowed off. We found, also, small altars used for burning incense. In the center of the square is a large basin of stone which appears to have been used for baptism, and in which, also, sacrifices may have been made in common. After passing this square, we ascend by a great number of steps to a high place, which appears

to have been devoted to mitotes and other ceremonies; it seems to have been constructed with the greatest care, for through the whole of it there can still be found stone excellently worked. On one side of this structure is a tower or terrace, very high, and overhanging the river which flows at its base.

"Here a large piece of the wall has fallen, exposing the entrance to two caves or passages extending under the structure, very long and narrow and well built. I was not able to discover for what they served or why they were constructed. There is a grand stairway descending by a great number of steps to the river. Besides these things, there are many others which prove that here was formerly the seat of a great power and a great population, civilized and considerably advanced in the arts, as is shown in the various figures and building.

"I endeavored with all possible care to ascertain from the Indians, through the traditions derived from the ancients, what people lived here, or what they knew or had heard from their ancestors concerning them. But they had no books relating to their antiquities, nor do I believe that in all this district there is more than one, which I possess. They say that in ancient times there came from Yucatan a great lord, who built these edifices, but that at the end of some years he returned to his native country, leaving them entirely deserted.

"And this is what appears most likely, for tradition says the people of Yucatan in time past conquered the provinces of Uyajal, Lacandon, Verapaz, Chiquimula and Copan, and it is certain that the Apay language, which is spoken here, is current and understood in

Yucatan and the aforesaid provinces. It appears, also, that the design of these edifices is like that of

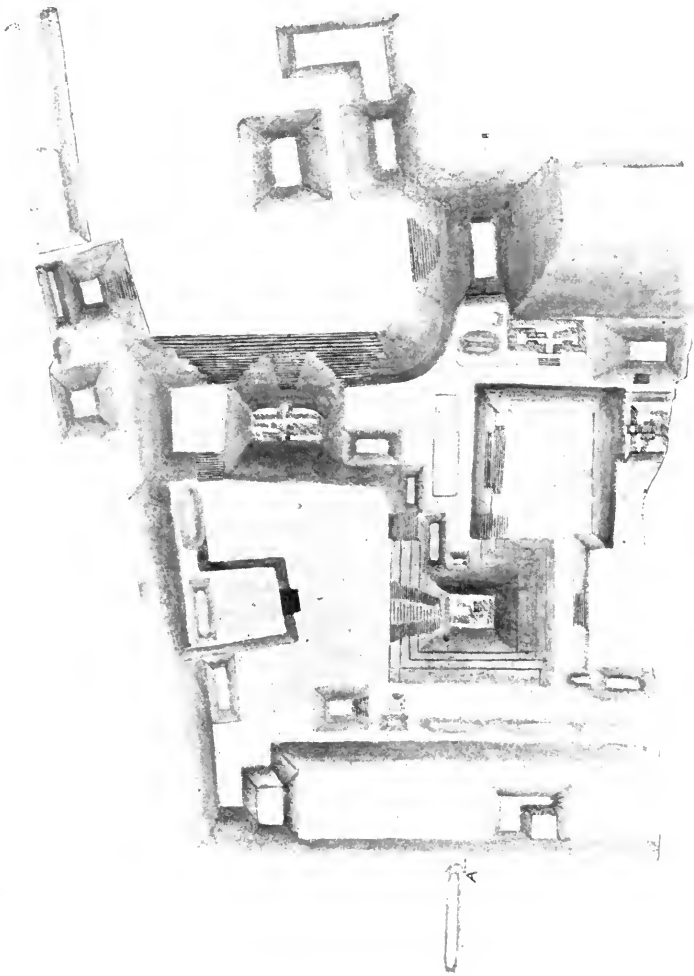

Fig. 107. Ground plan of ruins, Copan.

those which the Spaniards first discovered in Yucatan and Tabasco, where there were figures of bishops and

armed men and crosses. And as such things are found nowhere except in the aforesaid places, it may well be believed that the builders of all were of the same nation."

The chief interest of archaeologists in these ruins has always attached to the sculptured monoliths scattered amid the crumbling structures, some fallen, but most still standing as silent watchers of the scene of former glory in which they played, perhaps an important part. These, however, are exceeded in importance as archaeological remains by the other monuments. A ground plan of the main group of works is shown in Fig. 107. The whole of this area is elevated, the larger inner courts or spaces being on the first general level. On this as a base arise the various pyramids and terraces shown in the figure, most or all of which were crowned with buildings, now but heaps of ruins or fallen away down the slopes. The section (Fig. 108) shows the elevation of this assem-

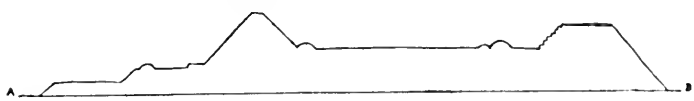

Fig. 108. Vertical section, main group, Copan.

blage of pyramids and terraces. There are other groups of less extent not included in the plan.

Although but small portions of walls have been discovered, sufficient examples of ornamentation have been found to show that art had reached here as advanced stage as at any other point in Central America. Among those discovered, the following may be mentioned as indicating the type: The highly ornamented monoliths showing human forms flanked by

hieroglyphic inscriptions have become well known through Stephens's work. An inner step is mentioned which has carved on it a number of human figures seated cross-legged and covered with elaborate breast-plates and other ornaments. A carved ornament, made up of several stones let into the wall, rises from this step on each side of the doorway and reaches the top of the wall. This appears to be the conventionalized form of the serpent head, which is repeated in other parts of the group. Above this ornament, and extending several feet each side of the doorway, runs an elaborate cornice, ornamented with seated human figures and hieroglyphs carved in medium relief. Many of the steps bear inscriptions; one is ornamented with a row of teeth, others with human figures. In one place the space between flights is covered with sculptures, among which are rows of death's heads. One of the altars which stand before the monoliths is a great carved turtle. At points human and grotesque heads are built into the wall; elsewhere are seen human figures seated on huge skulls, and what Mr. Maudslay, for want of a more definite name, terms serpent men.

The interior of the mounds and terraces is chiefly rubble, similar to that found in the Yucatec structures, but, seemingly for the purpose of giving additional strength, they have here interior supporting walls buttressed by the mass of the slopes, which are faced with cut stones.

It is evident, even from the very brief notice given here, that these ruins mark one of the most important centers of population in Central America, a place where native art had reached, perhaps, its most ad-

vanced stage in North America. The absence in the figures and decorations of armed warriors or war-like scenes indicates a condition of peace, but this fact does not prove, as Mr. Maudslay thinks, that abandonment of this and other cities found in ruins at the coming of the Spaniards was not in consequence of war among the tribes. That the people were "in a state of decadence, and that they had almost ceased to be builders," as he contends, is probably true, but this condition was most likely brought about by oppression of rulers and intertribal strife.

Passing into Nicaragua, the objects of chief interest to the archaeologist, which have been discovered, are rudely carved monoliths representing human and animal forms combined, the animal, usually alligator-like in form, holding the head of the human figure in its great jaws. But the description of these and numerous other interesting remains of this region must be omitted, as our allotted space will not admit of further additions to this branch of our work.

CHAPTER XXI.

MIGRATIONS OF THE MEXICAN AND CENTRAL AMERICAN TRIBES.

The discussion of the prehistoric movements of the Mexican and Central American tribes is introduced at this point because of the necessary and frequent reference to the conclusion on this subject in discussing the origin and growth of the native so-called civilization. In fact, the conclusion reached in regard to the origin and development of this advanced culture, and in regard to other questions relating to the past history of the tribes of this section, will depend to a very large degree upon the opinion formed respecting the prehistoric movements of these tribes.

Reference has already been made to the movements of population in that part of the Pacific division north of Mexico, which were found to be in most cases southward. The conclusion reached as to the existence of two great, distinct culture groups, the Atlantic and Pacific, implies that the general, or more extensive movements on the western side were parallel with its mountain ranges—that is, north or south—and not to or from the east. It is clear that the course of migration, so far as influenced by the physical features, was north or south.

Whatever be the theory of the original introduction of population into the continent, it must be conceded that its spread over it was through growth in num-

bers, expansion and migration. Although it is quite probable there was a greater degree of permanency among the American aborigines than has been generally supposed, yet it is evident that the distribution of population could have taken place only through migration, though this was a slow process and may have been merely the gradual extension of the growing and swelling mass.* However, the wide separation of the members of some of the stocks indicate extensive movements in the past. Migration is therefore a necessary factor in the problem, and it must be assumed that every group of population, every stock and tribe, has come to its historic seat from some other point. Not that all such movements were necessarily by stocks or tribes, as there were doubtless numerous centers of development in some of which the original germs may have been but feeble bands, or a few families which pushed their way in advance of the tribe or clan and wandered into other sections. Sir John Lubbock remarks that "It is too often supposed that the world was peopled by a series of migrations. But migrations, properly so called, are compatible only with a comparatively high state of organization. Moreover, it has been observed that the geographical distribution of the various races of man curiously coincides with that of other races of animals, and there can be no doubt that he originally crept over the earth's surface little by little, year by year—just, for instance, as the weeds of Europe are now gradually but surely creeping over the surface of Australia." However, as the only reason

* For an explanation of this and other similar expressions see the closing chapter.

for presenting these thoughts is conceded—to wit, that migration in some form is a necessary factor in the problem—we may proceed on this admitted basis to a discussion of the probable course of migration in the southern portion of the division.

The fact already noticed, that the data bearing upon the question indicate that the general movements north of Mexico were southward, leads to the inference that the general trend in Mexico was in the same direction, which conclusion is justified unless some valid reason can be offered for believing that the order was reversed in this southern region. It must be admitted, however, that the theory of a reverse movement in this region has been advanced by several authors. Hubert Bancroft emphasizes this opinion in his "Native Races of the Pacific States," as follows:

"First, as already stated, the Maya and Nahua nations have been within traditionally historic times practically distinct, although coming constantly in contact. Second, this fact is directly opposed to the once accepted theory of a civilized people, coming from the far north, gradually moving southward with frequent halts, constantly increasing in power and culture until the highest point of civilization was reached in Chiapas, Honduras, and Yucatan, or as many believed, in South America, Third, the theory alluded to is rendered altogether untenable by the want of ruins in California and the great north-west; by the utter want of resemblance between New Mexican and Mexican monuments; by the failure to discover either Aztec or Maya dialects in the north; and finally the strong contrasts between the Nahuas and

Mayas, both in language and in monuments of antiquity. Fourth, the monuments of the south are not only different from but much more ancient than those of Anahuac, and can not possibly have been built by the Toltecs after their migration from Anahuac in the eleventh century, even if such a migration took place. Fifth, these monuments, like those of the north, were built by the ancestors of the people found in possession of the country at the Conquest, and not by an extinct race or in remote antiquity. Sixth, the cities of Palenque, Ococingo and Copan, at least, were unoccupied when the Spaniards came, the natives of the neighboring region knew nothing of their origin, even if they were aware of their existence, and no notice whatever of the existence of such cities appears in the annals of the surrounding civilized nations during the eight or nine centuries preceding the Conquest; that is, the nation that built Palenque was not one of those found by Europeans in the country, but its greatness had practically departed before the rise of the Quiche, Cakchiquel and Yucatan powers. Seventh, the many resemblances that have been noted between Nahua and Maya beliefs, institutions, arts and relics, may be consistently accounted for by the theory that at some period long preceding the sixth century, the two peoples were practically one so far as their institutions were concerned, although they are of themselves not sufficient to prove the theory. Eighth, the oldest civilization in America which has left any traces for our consideration, whatever may have been its prehistoric origin, was that in the Usumacinta region represented by the Palenque group of ruins."

That several of the statements made in this quota-

tion are incorrect and others are not sustained by subsequent investigations will appear from the data presented in this work. J. D. Baldwin expresses substantially the same opinion in his "Ancient America:" it was also held by J. W. Foster, Squier and some other authors. On the other hand the prevailing opinion among scholars of the present day, so far as published, appears to be that the Nahuatl group originated in, or at least came from some place north of the known localities of the tribes composing the family. In confirmation of the latter opinion, the following considerations are offered in addition to the incidental notes bearing on the subject in preceding chapters.

If Buschmann be correct in uniting the Ute or Shoshone group of dialects with and making them a part of the Nahuatl or Mexican stock, named by Dr. Brinton the "Uto-Aztecan Stock," we have, in the spread of this extensive family, what would seem to be incontrovertible evidence of the tendency in this western section to southern movements. Members of this family are scattered from the vicinity of Columbia river to the Isthmus of Panama: and so far as any evidence has been found in regard to the movements of the tribes, it indicates they were southward. Offshoots from the Aztec group are found southward in Guatemala, Nicaragua and the borders of the Isthmus: and the movement of the Shoshones, so far as known, has been in the same general direction. The Comanches, the most south-eastern Shoshonean branch, and the only one which has come down east of the Rocky Mountains, have a distinct tradition that some two hundred and thirty or forty winters ago they lived as one people with the Shoshones somewhere to the north of

the headwaters of the Arkansas river. Dr. Gibbs is inclined from his investigations to the belief that this group has moved south and west, and suggests that they came from the eastern side of the Rocky Mountains by way of the northern passes, in which he is probably correct, as the indications, the closer they are studied, seem to point to the great region west of Hudson's Bay as the point of dispersion from which two streams issued. Parted by the desert plains to the south, one turned south-eastward and poured into the Atlantic division, the other coursing south for a distance along the east base of the Rocky Mountains, turned westward, and crossing over the passes flowed southward along the intermontane valleys.

Mr. Gatschet remarks (Appendix to Vol. VII, U. S. Geog. Surv. 100th Meridian), when speaking of the relation of the Shoshone and Aztec groups: "From all that, it would be, nevertheless, preposterous to conclude that the Aztec civilization came from the north; but we gain the evidence that the originators of the national Aztec legend, which professes this people to have issued from seven caves in the north, were cognizant of the affinity of their nation with some tribes living north of Anahuac." It is true that it does not necessarily follow from the relationship of the northern tribes with those of the south, that the civilization of the latter came from the north, or that the movement was southward, as the inception of this advanced culture which, in accordance with popular usage, we speak of as "civilization," may have been due to some cause or impetus which did not exist in the northern section. There is, however, in the distribution of this civilization, in respect to the widely scattered members of the

great family, a strong and apparently conclusive argument in favor of the theory of a general southern movement. As the members south of Anahuac share, to a great degree, this civilization, in its most advanced form, while those north of Mexico do not, it would seem that the only explanation of this fact is that the movement was from the north toward the south.

The uniform tradition of all the tribes of this stock in Sonora and Sinaloa, so far as they were obtained by the early missionaries, was, according to Father Perez de Ribas, who made a careful collection of the legends, to the effect that their ancestors had migrated from localities further to the north. The conclusion reached by Mr. Bandelier, who visited that section and investigated the subject somewhat carefully, was in conformity with this tradition. It is also well known, as mentioned in the quotation from Prescott's work, that the Mexican or Nahuatl tradition in regard to their former home is, that their ancestors came from some locality in the north or north-west, agreeing therein with the linguistic evidence. The general consensus of opinion among scholars of the present day, so far as published, is in conformity with this tradition, and may be accepted as probably the correct view. The discussion may therefore be limited to the migrations of the other stocks of this section, especially those of the Mayas, in regard to which there still appears to be some difference of opinion, though their northern origin is generally conceded.

The Zapotecs and Mixtecs, closely affiliated tribes, whose territory is embraced chiefly in the state of Oaxaca, must be classed among the earliest inhabitants of the southern half of Mexico. It is not improbable

that the oldest evidences of Mexican civilization are to be found here. Their early history, however, is almost a blank, as they have neither records nor reliable traditions which refer to their origin, their migrations or first settlement in this region. Charney says they believed themselves to be autochthones, that they are ignorant of their origin, and have preserved no record of the time when they established themselves in the country. Torquemada ("Monarchia") mentions a story which relates that they were refugees from Cholula. Notwithstanding the radical differences in the languages of the two peoples, most of the old writers connect them with the Nahuatl stock. It is stated by some authorities that they formerly inhabited the region of Puebla, together with the Olmecs and Xicalancas. Sahagun says they were or claimed to be of Toltec descent. It is even averred that Mitla was founded by the disciples of Quetzalcoatl. The Mixtecs, according to some writers, derived their name from Mixtecatl, one of the seven leaders who tradition says started out from Chicomoztoc, "the seven caves" in the far north.

Notwithstanding this uncertainty in regard to these tribes, there are some grounds for assuming that they came from the north, as all the other tribes of the western part of Mexico. First, the fact that such was the general course of the migration of the tribes of this section would, in the absence of any evidence on the point, lead to this conclusion; second, the evidence of long contact with the Mexicans adds support to this belief; and third, as shown in preceding and following chapters, there is monumental evidence justifying the belief that they were for a time located

as far north as Zacatecas, and none indicating a southern origin.

The small tribes known as the Zoques and the Mixes or Mijes, wedged in between the Zapotecs and tribes of Chiapas, are supposed by some authorities to have been the earliest inhabitants of the Oaxacan region, and their dim traditions point southward, especially to southern Chiapas, as the place of their former home, from whence they were driven by the Chapanecs. The origin of the Chapanecs is variously given.

According to one tradition, they came to Chiapas from Nicaragua, and, having driven out the Zoques, occupied the country. The generally received opinion, however, is that held by Orozco y Berra, Garcia, and other writers, which assumes, as the more authentic tradition, that which says, they moved down from a more northern region, following the Pacific coast until they came to Soconusco, where they divided, one part entering the mountains of Chiapas, the other part going on southward to Nicaragua, where they have been found under the name of Mangues, along the shores of Lake Managua. The various tribes of the Nahuatl or Mexican stock found in Guatemala, Nicaragua, and other parts of Central America, have, according to their traditions so far as given, and as is now generally conceded, migrated from some region as far north at least as central Mexico. It would seem, therefore, from the evidence, that the tribes and stocks of Mexico and Central America, unless the members of the Mayan stock form an exception, migrated in prehistoric times from more northern localities than those they were found occupying at the

coming of the Spaniards. We turn, therefore, to the history and traditions of this stock.

Positive evidence of minor movements and prehistoric shiftings among the tribes of this family is found in their geographic distribution at the time of discovery, a number being scattered over Guatemala, others in Chiapas, on the Rio Lacandon, in the peninsula of Yucatan, and on Panuco river, north of Vera Cruz. Nevertheless, with the exception of the Huastecan offshoot on the Rio Panuco, they form a somewhat geographically compact body as compared with the scattered members of the Nahuatl stock. The rugged range of mountains which separates the eastern and western groups does not appear to have been an effective barrier to prehistoric migrations.

As the characteristics of the languages of a stock affords, as we have seen, great assistance in tracing the movements, and hence to a certain extent the history of the tribes of a stock, we call attention here to the classification of the languages of the Mayan family so far as we shall have occasion to refer to them. Omitting some of minor importance, the following are perhaps all the tribes of the family we shall have occasion to refer to. Their respective localities are also given:

Maya group.	Huastecas, on Rio Panuco, north of Vera Cruz Mayas (proper) in the peninsula of Yucatan. Tzentals, in southern Tabasco and eastern Chiapas Tzotzils in Chiapas, near the Tzentals. Lacandons, on the upper Usumacinta.

Mam-Quiche group.
- Mams, in extreme western Guatemala.
- Quiches, in Guatemala, immediately east of the Mams.
- Cakchiquels, in Guatemala, immediately south-east of the Quiches.
- Pokonchi, in central Guatemala, adjoining the Quiches on the north.
- Tzutuhils, a little tribe wedged in between the Quiches and Cakchiquels.
- Pokomams, in southern Guatemala, directly east of the Cakchiquels.

Otto Stoll, one of the latest and most reliable authorities on the ethnology of this family, divides it linguistically into three chief branches: the Huastecan, which is placed at the head as the oldest dialect, constitutes the first; the Maya group, the second branch, standing next in age and relationship to Huasteca; the Mam-Quiche group, the members of which are located in Guatemala, constituting the third branch.

It must be remembered also that it was among the people of the Mayan stock pre-Columbian culture in America reached its most advanced position; and that, in studying the movements of the various tribes and their final settlement in their historic seats, we are in truth studying their history and the history of the monuments of that culture which remain for the examination of explorers.

The history of the Mayas and Mexicans has been so overloaded with tradition, idle tales, inventions of imagination by the old authors, and by the embellishments and theories of modern authorities, that it is difficult to pick one's way through the maze. It is only within the last few years that scholars have un-

dertaken a critical study of the various problems relating thereto. Our attempt at present will be limited to a brief examination of the movements of the branches as arranged by Stoll, and some suggestions as to the origin of the civilization of this people.

The earliest tradition of the Mayas proper, of Yucatan, in regard to their origin, recorded by the Spanish authors, is that given by Lizana. He says that in their ancient language they name the east in another manner from what they do to-day. At the present they call the east *Likin*, which is the same as to say the place from which the sun rises upon us. And the west they name *Chikin*, which is the same as the falling or setting of the sun, or the place where it hides with regard to us. "But in antiquity they said of the east *Cenial*, 'little descent,' and of the west *Nohenial*, 'great descent,' of the one side (east), few people, of the other side (west), the great multitude." The historian Cogolludo, on the other hand, while giving the same tradition, concludes after some contradictions, that the colony from the east must have been much more numerous and more ancient than the other. Landa and Herrera record a tradition that the oldest inhabitants came from the east, the sea being divided to afford them a passage. Some of their culture heroes come from one direction and some from the other. Itzamna, the chief hero or deity of the Mayas of central Yucatan, comes from the east, dwells long in the land and founds Izamal. The people of Chichen-Itza had also traditions of culture heroes: one regarding three brothers who came from the west and gathered together the people and ruled over them: another, possibly connected with the pre-

ceding, tells of another and greater hero, Cukulcan, who came also from the west and ruled over the Itzaes and founded Mayapan. Whether the latter came thither with the people, or subsequently, is left uncertain by the tradition. Lastly, we have the myth of Votan, the culture hero of the Tzental group already referred to.

To what extent these traditions are to be resolved into light and sun myths is a question we shall not undertake to decide at this point; that they had in the minds of the inhabitants some relation to their origin and the origin of their civilization can not be denied. Fancourt, in his "History of Yucatan," and Dr. Brinton, in the introduction to "The Maya Chronicles," reject, no doubt correctly, the idea of an eastern influx, and ascribe the population to immigrants from the west and north-west. As this eastern descent has connected with it some miraculous features, and there are no facts to support or give color to it, it is perhaps wise to reject it *in toto*, as has been done by most of the recent authorities. But this does not dispose of the Itzamna and Votan myths.

It is apparent from the physical features of the country that entrance into the peninsula, if not by the sea, must have been from the south or west, and the most reliable traditions are consistent with this fact. Herrera, who copies Landa, says: "Whilst the Cocomes lived in this regular manner, there came from the southward and the foot of the mountains of Lecando, great numbers of people, looked upon for certain to have been of the province of Chiapa, who traveled forty years about the desert of Yucatan, and at length arrived at the mountains that are almost

opposite to the city of Mayapan, where they settled and raised good structures, and the people of Mayapan, some years after, liking their way of living, sent to invite them to build houses for their lords in the city. The Tutulxiu, so the strangers were called, accepting their courtesy, came into the city and built, and their people spread about the country, submitting themselves to the laws and customs of Mayapan in such peaceable manner that they had no sort of weapons, killing their game with gins and traps." This, which appears to relate to a real occurrence, refers beyond question to the incursion mentioned in the Native Maya Chronicles, which refer to this migration as "The departure made from the land, from the house Nonoual, where were the four Tutulxiu from Zuiva at the west: they come from the land Tulapan, having formed a league."

It is apparent from Herrera's statement and from the chronicles that the country was already inhabited when the Tutulxiu arrived.

A comparison of all the data bearing on the subject, which include not only the traditions, but also the linguistic and historical evidence, the architectural forms, hieroglyphs, etc., lead to the following conclusion: That the Tutulxiu, who were still represented at the coming of the Spaniards, came from the region of the lower or middle Usumacinta, that is to say, some place in Chiapas or Tabasco: that previous to this migration, the Itzaes, who, as veritable history informs us, at a comparatively recent date, moved south to Lake Peten, where they were found by Cortez, had, at a much earlier date migrated in a body, or sent a large colony northward into the peninsula,

where they founded the city of Chichen-Itza. This coincides in the main, it is believed, with the opinion of most students of the present day who have devoted attention to the subject.

It seems possible to trace the Mayan stock back with reasonable certainty to central Mexico. It is probable that somewhere in that region the family group was divided into two branches, one of which, with the Huastecas in the lead, went toward the east; all of the branch, however, except the Huastecas, turning southward, entered the valley of the Usumacinta. One offshoot of this branch moved on south-eastward to the Peten region, and sent a colony northward which founded Chichen-Itza. Others from the seats in the Usumacinta valley pushed their way northward into the peninsula. The western branch, which included the Pokonchi, Quiche and Mam groups, moved on at a later date toward the south-east, stopping at the "second Tulan," which the author locates, without any attempt at exact definiteness, in the region of northern Chiapas. This was the final point of dispersion of the western branch, from which the tribes proceeded to their historic seats in Guatemala.

It is necessary to bear in mind that, although some of them were migrations in the true sense of that term, others were more likely the slow and gradual results of growth and expansion. It seems quite probable that before the western branch had left the region of the second Tulan, that is to say, the country in and about northern Chiapas, the older colonies located on the Usumacinta had grown in numbers, and gradually pushed their settlements into the peninsula. It is also possible that the eastern coast, north of Laguna

de Terminos, was reached and occupied before Chichen-Itza was founded. That the people who founded Chichen-Itza passed from the region of Lorillard City or the upper Usumacinta to the Peten region, and thence northward, appears to be proven by the identity of hieroglyphic types heretofore noted, and similarities in other respects.

CHAPTER XXII.

MIGRATIONS OF CERTAIN MAYAN TRIBES.

The Quiche group, which includes the Cakchiquels and Tzutuhils, located in Guatemala, all claim to have come from some distant land which was the home of their ancestors; and related in their traditions their early wanderings which finally brought them to their historic seats. In the Popol Vuh or Sacred Book of the Quiches, a native work, which is largely mythical, it is stated that they "came from beyond the sea." After the purely mythological portion there follows something like tradition in which it is said the people multiplied greatly in a region called the East, and migrated in search of gods to Tulan-Zuiva (the "seven caves"), where four gods were assigned to the four leaders, namely (the gods) : Tohil, Avilix, Hacavitz and Nicahtagah. Here their language was changed or divided, and the division into separate nations was established. Suffering from cold, and endeavors to obtain fire while they were awaiting the sun, are the points most dwelt upon during their stay at Tulan. In connection with these trials they were visited by an envoy from Xibalba, which is generally supposed to have been located in the region of Palenque, if not purely mythical. They abandoned or were driven from Tulan, and after a tedious journey, including apparently a crossing of an

arm of the sea, or some water to which this term was applied, reached Mt. Hacavitz.

The tradition of the Cakchiquels given in their "Annals," also a native work, is substantially the same as regards the points mentioned. Their ancestors are supposed to have come from the other side of the sea, from the land of Tulan, where they were brought forth. There were four clans. "Four men came from Tulan; at the sunrise is one Tulan, and one is at Xibalbay, and one is at the sunset; and we come from this one at the sunset; and one is where God is. Therefore, there are four Tulans, they say, oh, our sons; from the setting sun we came, from Tulan, from beyond the sea."

It is undoubtedly true that these traditions are largely mixed with myth, and that it is a very difficult task to pick out the real from the mythological. Nevertheless, there is a certain general trend in all which implies unity of origin; there are also certain terms which indicate the latitude, the character of the climate, the country, etc. Although the incidents related may be largely mythical, they apply only to one region of North America, and show the country in which they are supposed to have occurred.

The four Tulans referred to in the extract from the Annals of the Cakchiquels heretofore given, are mentioned in the first part of the tradition which relates to the origin of the people, and may on this account be considered chiefly mythical. There are, however, repeated mentions of another Tulan *to which they came* after crossing the sea, which appears to be considered by the tradition the great and important point in their

migrations. Numerous extracts might be given showing this, but the following will suffice:

"They say that the seven tribes arrived first at Tulan, and the warriors followed, having taken up the tributes of all the seven tribes when the gate of Tulan was opened." "The Tzutuhils were the first of the seven tribes who finished coming to Tulan, and then we the warriors came, as they say." Here they paid tribute of jade, silver, feather stuffs, of "articles painted, articles sculptured, astrological calendars, reckoning calendars, flute songs, songs hated of you because the seven tribes paid this tribute." Again it is said: "First came the Quiche men; they acquitted themselves of their tribute in the first month; then arrived their companions one after another, by their families, their clans, their tribes, their divisions in sequence, and the warriors, until the whole of them had finished arriving in Tulan."

When it is added that numerous incidents are mentioned as occurring at and during the departure from Tulan, and that the Quiche tradition, as given in the Popol Vuh or Sacred Book, confirms the statement, that this was also an important point in their migrations, there would appear to be no good reason for considering it other than some real locality which had an important place in the history of these tribes. It is more than probable that events which properly belong to widely different dates are crowded too closely together, but this does not necessarily invalidate the traditions.

In both traditions, the statements relating to this Tulan, which was, as shown thereby, the point of the dispersion of the tribes, indicate a locality correspond-

ing in features and characteristics to the Central American region. Mention of the tapir limits the territory in North America to that region south of central Mexico. Some of the animals alluded to in the Quiche legend as belonging to this region are found only in this southern section. Among the articles given as tribute at Tulan were green feathers worked and sewed together, calendars and cacao. As these references relate to the time they were at Tulan, we are justified in concluding that it was located, at least traditionally, if not really, in this southern section.

As the Mams occupy the extreme western portion of Guatemala and the Quiches and Cakchiquels, according to the traditions, passed them in going to their seats in the south central part of Guatemala, they must necessarily have come from some place as far north-west as Chiapas. This agrees with the statement by Orozco y Berra that they inhabited Soconusco from remote times. We thus establish the direction of the movement of the western branch, as it is impossible, considering the geographical positions of the tribes, to explain a northward movement in harmony with the statements of the tradition. As the only probable and acceptable theory in regard to the movements of the peninsular Mayas is that they came from the west or south-west, we thus obtain two lines pointing toward the same general locality, southern or central Mexico; either Oaxaca, Tabasco, Puebla, or the region about the city of Mexico. This view is strengthened by some additional data, which are well worth considering in this connection.

It is not impossible that the key to the puzzle is to

be found in the relations with and prehistory of the Totonacas, a well-known tribe which Cortez first encountered on landing in Mexico, and from whose territory he began his celebrated march to the imperial city, yet withal a mysterious people, whose ethnic position among the aboriginal nations of this region has not, as yet, been definitely settled. At this time they occupied the country known as Totonicapan, included in the present state of Vera Cruz, and adjoining the territory of the Huastecas. According to their traditions, which appear to have some basis of truth, they had resided there for eight hundred years at the coming of the Spaniards, and had been an independent people up to a few generations preceding this coming, when they were subjugated by the Mexicans. They had migrated, according to their traditions, from the west and north-west, apparently from the interior, in the region about the City of Mexico. They claimed to have migrated from the valley of Mexico, and to have lived long near the banks of Lake Tezcuco, where they built the pyramids of Teotihuacan. Torquemada, who is the chief authority for their traditions, says: "Of their origin, they say that they set out from the place called Chicomoztoc, or 'seven caves,' together with the Xalpanecs; and that they were twenty divisions, or families, as many of the one as of the other; and although thus divided into families, they were all of one language and of the same customs. They say that they started from that place, leaving the Chichimecs still shut up there; and they directed their journey toward this part of Mexico, and having arrived at the plains on the lake, they halted at the

place where Teotihuacan now is; and they affirm they built there two temples, which were dedicated to the sun and moon. Here they remained for some time, but either not contented with the place, or with a desire to pass to other places, they went to Atenamitic, where Zacatlan now stands." From there they drifted further eastward, settling on the coast, where they were found by the Spaniards.

That they were a primitive—so-called pre-Toltec, at least pre-Aztec—nation in Anahuac, is generally conceded. That they were a cultured people is also admitted. That the temples and pyramids of Teotihuacan were built by this people may be doubtful; nevertheless, as shown above, they do not appear to be Aztecan.

This tribe seems to have been in close relation with the Huastecas, nor is there any valid reason why we may not infer that the two peoples were together in the migrations mentioned. On the other hand, there are some facts which favor this assumption. The position of the Totonac language in relation to the Nahuatl and Maya is yet an unsettled question among linguists. By some it has been joined to Nahuatl, by others to the Maya, but by the latest authorities it is considered as independent. Sahagun says they claimed relationship with the Huastecas, which of course would bring them into the Mayan family. That their language contains numerous words from Maya roots, and presents other resemblances, is known. But at the same time it is claimed, on the other side, that there are fully as great resemblances to the Nahuatl. Charencey says the Totonac language presents striking analogies with the Mam-Huastec.

The tradition recorded by Sahagun, so often quoted by writers, which refers to the landing of Mexican tribes and the Huastecas at the mouth of the Panuco river, is valuable chiefly, and in fact only, as being confirmatory of the tradition given in the earlier and more correct form. That part, however, which refers to immigrants disembarking from vessels, and implying a passage across the sea, must be rejected as an addition and not a part of the native legend. Mr. Bandelier, who is familiar with the early Spanish authorities, says that neither of the two earliest sources from which this tradition is drawn speaks positively as to a "landing," but on the contrary only of the Xicalancas reaching the coast from the interior. This appears, also, to agree with the tradition of the Huastecas as given by Marcelo Alejandre in his "Cartilla Huasteca," which says that they had their origin in the regions of the north, establishing their first location where Altamira of to-day is located, in the state of Tamaulipas. According to Gomara, "Xicalancatl walked more earth, arrived at the sea of the north, and on the coast made many towns; but the two principal ones he called by the same name. One Xicalanco is in the province of Maxcalcingo, which is near Vera Cruz, and the other Xicalanco is near Tabasco." It appears, therefore, that the idea that the tradition referred to emigrants coming over the sea was an erroneous interpretation given to it by Sahagun, simply from the fact that it spoke of people arriving at the mouth of Panuco river. All the evidence is entirely against the theory that any of the Mayan or Mexican tribes came from Florida or the West Indies.

Bringing together all these points, and other indi-

cations which can not be given in detail here, and studying them carefully, their bearing seems to point to some locality in western or central Mexico as the place of development of the Mayan tribes, and to render it probable that they are mixed up with the Toltec tradition.

If we adopt the opinion that there was first a division into two branches, one from which the southern and western tribes descended, the other that from which the northern and eastern tribes were developed, we may be justified in the following conclusions: This first division having taken place in western or central Mexico, the Mam branch moved on south toward Chiapas. Having increased in numbers and clans as time passed, through some political convulsion, or being harassed by enemies, the tribes, which by this time had been at least in part formed, moved on toward the south-east. It is to the latter movement that the Quiche and Cakchiquel traditions chiefly relate. By this time, and perhaps previous thereto, the Nahautl tribes had appeared upon the scene, and possibly exerted the pressure which forced the Mayan tribes southward, though there were other peoples both on the east and west.

It appears more probable, however, judging by the linguistic evidence, geographical position and difference in culture, that the Huastecas must have broken away from the main body before any of the other divisions took place. Or else, if they led off one branch going eastward, they must have parted from it before the other tribes were differentiated. How far north, or at what point this occurred, it is, of course, impossible for us to determine with certainty;

that it must have been north or north-west of the valley of Mexico may be assumed with some degree of probability. It is also quite likely that at this time they (the Huastecas) joined, or were joined by the Totonacas, with whom they gradually shifted to the gulf shore. The reason for this supposition is that, so far as known, the Huastecas had not adopted the peculiar calendar system which prevailed among all the other tribes of the stock, as also among the Mexicans, Zapotecs and most of the Central American nations. It is somewhat singular that this calendar appears to have been unknown to or not adopted by the Huastecas, though it seems to have been in use among the Totonacas. This, however, we presume is to be explained by the fact that the latter had been brought under the direct control and supervision of the Mexicans, who caused its adoption by them. If it be true, as now supposed (though the evidence is not entirely satisfactory), that this calendar was not in use among the Huastecas, this would seem to furnish conclusive proof that they had broken away from the other portion of the Mayan stock before it came into use.

Taking all the facts and indications into consideration, we are inclined therefore to the view that the development of the Mam-Quiche branch took place in Oaxaca, or Chiapas. The chief point of dispersion was most likely in the mountainous section of the latter district, though the formation of the tribes had taken place, at least in part, before this point was reached. It is also possible, and in fact probable, that the branch which settled in the lower half of the Usumacinta valley broke away, as above indicated,

before reaching this point of final dispersion, which seems to refer chiefly to the southern tribes.

The Totonacas claimed, as shown above, that they were the builders of the temples at Teotihuacan. If we suppose the Mayas, or the eastern branch of the stock, to have been associated with them or in this region at this time, the tradition appears to account for some facts which are otherwise difficult to explain. "While the name Teotihuacan," says Mr. Bandelier, "is Nahuatl, the confused traditions concerning the origin of the ruins ascribe them to an entirely different tribe."

It appears that this author, who rejects the view that the Toltecs were a distinct nation or tribe known by that name, is inclined to attribute the works at Teotihuacan to the Mayas, in which it is probable he is correct. Some of the types of art found in this section and at Tulan present some marked resemblances to certain types discovered in Yucatan.

The result of our inquiry therefore is that the Mayan stock moved south-eastward from some region as far north-west as central Mexico, probably preceded by the Zapotecs and some of the other older stocks. That they were somewhat closely followed by and came into contact with the Nahuatl stock before leaving the Tulan, which we have supposed was on the boundary of Chiapas, is evident from the facts and traditions mentioned. That the Mayas were the first people to occupy Yucatan, and that they had already made considerable advance in civilization, although not established with positive certainty, is inferred

from the results of Mr. Henry C. Mercer's examination of the hill caves of this section mentioned hereafter.

Although the Mayas differ widely in language and to some extent in culture from the Nahuatl stock, yet it is possible that the belief of the Aztecs that they were at some remote period connected, though probably only by association, is correct. That the two peoples moved southward substantially along the same route appears to be the most reasonable conclusion we can reach from the data so far obtained. The original home from which the primal germ of the great Uto-Aztecan stock started on its journey southward was most probably the region now occupied by the Dené or northern Athapascans. Possibly from the same original germ, or from germs issuing from the same hive, were developed the Mayan, Zapotecan and the other small stocks of southern Mexico and Central America. That slight additions may have been received through occasional stranded vessels on the Pacific coast is possible, but this was not sufficient to leave any marked effect, unless it can be found in some particular customs or arts.

CHAPTER XXIII.

THE ORIGIN AND DEVELOPMENT OF CENTRAL AMERICAN CIVILIZATION.*

One of the most difficult problems of North American archaeology is that relating to the origin and peculiarities of Mexican and Central American civilization. That it was indigenous is now the prevailing opinion among antiquaries and ethnologists. While this conclusion may be accepted as beyond any reasonable doubt true in a general sense, it is possible that in some of its features it may have felt the impress of extraneous or foreign influence. Nevertheless it is treated here as indigenous, that is to say, as being of native origin and growth. This being admitted, does the evidence show that its development was entirely within the geographical limits heretofore mentioned? In other words, can we trace by the monuments and traditions the growth of this civilization, from its commencement to the highest stage it reached, wholly within this area, or do we have to look beyond these limits for the evidence?

If we take the architecture and attempt to trace the development of the different types by the monuments which are found within the respective areas of the different stocks, we shall find our efforts to a large degree baffled. Although Yucatan is dotted over with ruins of Mayan structures, yet none of the many

* As no native tribe can be called "civilized" in the true sense of the term, it is used here merely as indicative of the more advanced culture of these nations.

explorers who have studied them have pointed out the various steps of the builder's art as shown by these ruins. Nor is this to be wondered at, for the very good reason that there do not appear to be in these areas examples which can be pointed to as the beginnings of this art, the first rude efforts. Historically and otherwise we learn that there were dwellings of stone and dwellings of wood, from the simple thatched hut to the stately mansion. Possibly the temples may have been developed from the longitudinally divided houses described by Landa, but no modification of these would have produced the temple-crowned pyramids. Violet le Duc has tried to show how the stone structures, with their pointed arches and heavy frieze, are but stone copies of wooden buildings, or that the one has been modeled after the other. Though Fergusson may have traced successfully this kind of transition in the history of Oriental architecture, it is evident to any one who will examine with care the Frenchman's figures, that with the exception of the mode of dividing the body, there never were Mayan structures of wood of the pattern given. In Egypt, where the beginnings are less apparent than in some other centers of Eastern civilization, remains showing primitive efforts are still found. Examples of the simple, plain tombs from which, according to Rawlinson, the pyramids were ultimately developed, remain to the present day; but, so far as the author is aware, nothing has been found in the Maya territory to mark the commencement of that art which designed and constructed the temples and pyramids of Uxmal, Chichen-Itza and Kabah. So far as architectural skill is concerned, there is but little difference observable in the structures of Yuca-

tan and the adjoining sections attributable to the Mayas. The principal variation is in size and degree of ornamentation; even the plans, as shown by Mr. W. H. Holmes, in his excellent paper on "Archaeological Studies Among the Ancient Cities of Mexico," are, to a large extent, conventionalized. But the fact remains that among the hundreds of examples which exist, there are none showing the first rude efforts of the builders. As stated by Mr. Holmes in the quotation given in a previous chapter, while it is true that some of the buildings are composite and show successive accretions, there are others which stand as perfect units of design. But he speaks nowhere of the rude beginnings found in that section from which they worked up to the more perfect form; his only intimation of progress is that in the quotation given below. Nor has any author, so far as the writer is aware, given us this information.

How are we to account for this absence of earlier forms except upon the theory that when the tribes entered their historic seats they had already become proficient in the builder's art? The tradition of the Tutul-Xiu, as given by Herrera, indicates that they brought this art with them. That wood was used chiefly for ordinary dwellings is true, and that the Maya architects may have to some extent modeled their stone structures after those of wood may be true, but certainly not to the extent claimed by Violet le Duc; nevertheless it seems improbable that this skill should have been attained without comparatively rude beginnings. The only indication that the art, in this type, was still in an undeveloped stage, is that mentioned by Mr. Holmes:

"Notwithstanding the success of these Maya masons in erecting buildings capable of standing for hundreds of years, they were yet ignorant of some of the most essential principles of stone construction, and are thus to be regarded as hardly more than novices in the art. They made use of various minor expedients, as any clever nation of builders would, but depended largely on mortar and inertia to hold their buildings together."

Mr. Henry C. Mercer, who has explored a number of caves in Yucatan for the purpose of searching for indications of the early inhabitants, comes to the conclusion that the Mayas were the first inhabitants, and that they had acquired their civilization before entering that territory. These facts, apparently at least, justify us in searching for the remains of their primary efforts along the route of their migrations.

Although our information is meager in regard to the antiquities of northern and north-western Mexico, yet enough is known, as appears from the descriptions given, to state positively, notwithstanding all that has been written and said to the contrary, that some of the ruins found in that section may have been the primitive efforts of the civilized tribes of southern Mexico and Central America. Whatever opinion we may hold on this point, two things which have an important bearing on the question must be admitted: *First*, as has already been stated, that in the central region, or Maya sites, there are no evidences of the primitive architectural efforts; and, *second*, that it is only to the ruins north of this central region we can look for these extralimital primitive forms. There we do find what may possibly be the remains of the prim-

itive types; but southward until we reach Nicaragua the structures and inscriptions, although showing variations and the introduction of additional forms, are too apparently the outgrowths of what we may term the central types for this fact to be overlooked or disputed.

It is a somewhat strange fact, if we judge only by the hieroglyphic inscriptions and manuscripts, in the Mayan characters, that we would be compelled to conclude that they were brought to comparative perfection at the time they were invented. A difference, it is true, in the forms and ornamentation, and, to a certain degree, an advance toward a more perfect type, can be traced, but no examples, so far as the writer is aware, of the first rude beginnings, or the original forms, have been found. Some, comparatively rude, are found painted on pottery, scratched on shells or other soft material, but these belong to what may be termed demotic writing and are not primitive forms. Comparing the characters of the various inscriptions which have been discovered and those found in the few remaining pre-Columbian manuscripts, the result is as follows: *First*, it is apparent that the characters in the manuscripts have been adopted from those of the inscriptions. In other words, inscriptions preceded the manuscripts; hence we must look to the former for the older forms. What appear to the writer to be the oldest forms of the glyphs yet discovered are seen in those at Palenque and some of the inscriptions found by Charney at Menche (Lorillard City), though others discovered by him at this same place belong to the later and more ornamental type discovered in the Peten region, that is, those carved in wood discovered by Bernoulli at Tikal, a type also found at Copan and Chichen-Itza,

but in none of the inscriptions at Palenque. In all cases the same method of indicating numbers is followed, and the same calendar system as that of the Tzentals and the Dresden Codex is also followed. These facts form part of the evidence on which we base the conclusion given in a previous chapter, that the Itzaes passed from the region of the upper Usumacinta eastward to their seat about Lake Peten.

Another item found in this connection bearing on the migrations of some of the Mayan tribes is worthy of notice. During his studies of the Palenque inscriptions, the author has been surprised to find among the various glyphs one in which the chief character is the figure of a person lying on his back, his knees drawn up, his head partially raised up, and his hands placed on his stomach. A sitting figure with and without a head is found both in the manuscripts and inscriptions, but, unless shown in some of the inscriptions on the statues of Copan, the introduction of full length figures in the glyphs as a part thereof is unusual. This unusual hieroglyph is found twice in the inscription on the tablet of the cross known as No. 2; and once in one of the inscriptions in the Temple of the Three Tablets. If we turn now to the pages of Charney's "Ancient Cities of the New World," where the two prone statues are figured, we will find, seemingly beyond a reasonable doubt, to what our unusual glyph refers. These statues, which, according to Hamy and Charney, denote Tlaloc, the god of rain and fertility, were found at widely different points, one at Tlaxcala and the other by Dr. Leplongeon at Chichen-Itza. As has been correctly stated by Dr. Brinton, "a statue of a

sleeping god holding a vase was disinterred by Dr. Leplongeon at Chichen-Itza, and it is too entirely similar to others found at Tlaxcala and near the City of Mexico for us to doubt but that they represented the same divinity, and that, the god of rains, fertility and harvest." Mr. Bandelier mentions a fourth one found in the state of Puebla.

Shall we attribute the statue found in Yucatan to the Mayas and the others to the Aztecs? Or shall we ascribe both to the Mayas, thus assuming that some one or more of the tribes of the latter stock, at some period before their entrance into their historic seats, dwelt for a time in the vicinity of Tlaxcala? If the writer be correct in his suggestion that the glyphs referred to represent this diety, the latter supposition would seem to be the correct one.

Reasons have already been given for believing that the pyramids or temples of Teotihuacan date from a period anterior to the occupation of this region by the Aztecs, and hence can not be ascribed to them. It is true that indications of Aztec culture, which has, to a certain degree, been impressed upon them, are found, but some, in fact most, of the types differ from any thing that is known to belong to this culture, and the ruins are declared by the best authorities to be non-Aztecan. It must also be borne in mind that it is stated by the early writers that the name Tula (Thula, Tulan, Tollan, Tollam), was also applied to this place, a name which, although signifying "place of reeds," was explained, whether correctly or not, as meaning "place of Toltecs." It is apparent from these facts that some of the works of this place are attributable to an older people than the Aztecs, or a

people antedating their advent. It is also true, as argued by Charney, that some of the types found at Tula, as for example, the ornamental sculpturing on some of the columns, and the serpent-like form of others, bear a strong resemblance to some of the types found at Chichen-Itza.

[After this chapter had been written the writer received from Dr. Antonio Penafiel, of Mexico, a letter announcing the discovery in a plowed field at Tula, on the site of the "Temple of the Caryatides" (that of the double column with feet shown by Charney) of a shell on which are engraved hieroglyphic characters supposed to be of the Mayan type. An inspection of the photographs, which accompany the letter, prove this supposition to be correct beyond doubt. It is a puzzling fact, however, that these characters bear a closer resemblance to the southern variety, especially those on the shell found in Belize, of which a figure is given in the author's paper on "Day Symbols of the Maya Year," in the Sixteenth Annual Report of the Bureau of American Ethnology, than to those of Palenque or Yucatan. A similar type is seen in Fig. 84, page 140, of Dr. Brinton's "Primer of Mayan Hieroglyphics," which represents an inscription on a vase from a Quiche tomb, Guatemala. The difference is, however, due in part to the material on which the characters are inscribed and the way in which they are written, as may be seen by reference to Fig. 78 of Dr. Brinton's "Primer," which shows an inscription at Kabah, painted on stucco.

The discovery of this inscription, if corroborated by other finds, may have a tendency to show that the separation of the Mayan tribes did not take place until the

region of Tula was reached in the migration southward, or that the Mam-Quiche group followed the track of the eastern group to this point.]

It is proper also to bear in mind in this connection, that the ruins of Comalcalco, as has been stated, belong unquestionably to the type found at Palenque, and with more profuse ornamentation at Uxmal and other places in the peninsula. As Comalcalco lies in Tabasco on the road northward, it would be exactly on the route of migration from Mexico or Puebla to the region of Palenque, by the eastern or shore line.

While these facts are not sufficient of themselves to prove the presence of the Mayas in this central Mexican region, yet when we take into consideration the traditions which have been mentioned showing the probability that the Huastecas and the Totonacas at one time occupied this section, and that the works both here and at Cholula are certainly pre-Aztecan, we are perhaps justified in attributing some of them to that branch of the Mayas which went off with the Huastecas toward the east. To this must also be added the fact that the evidence so far adduced shows that the Mayas must have come from some point as far northward as central Mexico. The indications also bear us out in the supposition that the builders of the temples and pyramids of Palenque came to this locality, partly, at least, by way of the shore, or Tabasco route. This evidence not only indicates that the Mayas occupied, for a time, portions of the Mexican valley, in advance of the Aztecs, but it also serves to give some support to the theory that the Toltecs were the Mayas.

At Quemada, in Zacatecas, are the ruins of temples,

pyramids, walled terraces, stairways, etc. There also is seen a row of stone pillars running through a hall, as at Mitla. Bancroft does not think that these ruins show any marked analogies to the structures either north or south, though he admits that the pyramids are similar to those at the south. However, they do show that composite character which indicates transitional forms which must be found in all advances from lower to higher grades. An intermediate type between that of Casas Grandes and those further south, if constructed by a people migrating southward, not yet formed into tribes, would, of course, differ somewhat from the types both north and south, and would in all probability be, to a certain extent, composite in features.

There are, however, some features which lead to the impression that these works should be attributed in part to the Zapotecs, as for example. the rows of columns through the middle of halls, and the increase in the size of the rooms. The former is a peculiarity found elsewhere only in Zapotec ruins and at Teotihuacan, and indicates a different mode of construction from that found either in the Nahuatl or Maya architecture. The increase in the size of the rooms is a feature repeatedly mentioned by Mr. Bandelier as he proceeded southward in his journey through northwestern Mexico. The change, according to this writer, begins at Casa Grande. "The rooms," he remarks, "are higher and much more spacious than in the northern ruins; the doorways are higher and wider." Although Charney's zealousness in advocacy of the Toltecs has a tendency to bias his judgment in regard to any thing which bears on this subject, we quote his

opinion on the similarity mentioned, as it shows the impression left on his mind from a personal examination of the ruins in Oaxaca. "Las Casas Grandes, the settlements in the Sierra Madre, the ruins of Zape, of Quemada, recalling the monuments at Mitla, others in Queretaro, together with certain features in the building of temples and altars which remind one of the Mexican manuscripts, from which the Toltec, Aztec and Yucatec temple was built, make it clear that the civilized races came from the north-west." It is possible that the Mayas and Zapotecs were in close relation with one another during their migration southward; or supposing the latter to have been the earlier emigrants, that the former learned the art from them, subsequently developing their particular types in the more southern sections. It may also be added that the truncated pyramid at Mitla built of adobes, and the numerous adobe structures in the Zapotec region, are at least suggestive. The absence of the triangular arch is a marked distinction, though the flat roof was not entirely unknown in Yucatan.

At Casas Grandes, which is in Chihuahua, we see proofs of the initial steps of mound building. In fact, the evidence of gradual advance toward a higher grade in the architectural art is seen beyond question as we advance southward from Arizona to Quemada, be our opinion in regard to the authors of these works what it may. We must confess that, so far as we are able to judge from all that has been written in regard to the ruins of the south-west, there seems to be no other reason for denying this advance in type than a fixed purpose to maintain a theory. These raised platforms or low pyramids filled in solidly with

gravel, and the terraces supported by bordering walls, may justly be considered the beginnings of that art which culminated in the temples, terraces and pyramids of Yucatan and Chiapas. Walled terraces, platform mounds, an inner filling or hearting of gravel, mortar and stone fragments, are characteristic features of this southern region, and are found also in Oaxaca. It is true that in the southern locality the works are upon a larger scale, the types more perfect, and the ornamentation more profuse than at Casas Grandes. It may also be said that the southern types are more specialized, but this is precisely what would be expected upon the theory that the southern forms were developed from, and grew out of, the northern. The conclusion which Mr. Bandelier, who has studied the regions both of north-western and southern Mexico, has reached on this question, is so exactly in point in this connection that we quote it somewhat fully:

"Although the communal pueblo houses of the north seem to be different from the structures on the Gila and at Casas Grandes, they still show the same leading characteristics of being intended for abodes and at the same time for defense. In the northern villages, however, both features are intimately connected; whereas further south the military purpose is represented by a separate edifice, the central house or stronghold, of which Casa Grande is a good specimen. In this the ancient village of the south-west approaches the ancient settlements of Yucatan and of central Mexico, which consisted of at least three different kinds of edifices, each distinct from the others in the purposes to which it was destined. It seems, therefore, that between the thirty-fourth and the

twenty-ninth parallels of latitude the aboriginal architecture of the south-west had begun to change in a manner that brought some of its elements that were of northern origin into disuse, and substituted others derived from southern influences; in other words, that there was a gradual transformation going on in ancient aboriginal architecture in the direction from north to south.

"I have alluded only to the most striking examples of south-western aboriginal architecture, the large houses. In regard to another kind, the small detached buildings, it must be observed that the small house is probably the germ from which the larger structures were evolved, and that the small houses also undergo modifications, especially from north to south, in the size of the rooms. I repeat here what I said in my preliminary report to the Institute of August 11, 1883: 'There is a gradual increase in the size of the rooms in detached buildings, in a direction from north to south, which increase is most distinctly marked over the area where the detached house alone prevails.'

"There are regions, like central Sonora, where the small house is the only architectural type now remaining from ancient times. It will be noticed that the square or rectangular dwellings of the Opatas of the Sonora river confirm the impressions above recorded. If we compare them with the dimensions of the huts now inhabited by tribes living still further south, we find their size increases as we advance from a colder to a warmer one.

"Large halls are not found in the ruins of the north. They appear to be almost the rule at Mitla

and in Yucatan; and they are met with on the Gila, under a climate which is semi-tropical.

"Equally noteworthy is the increase in dimensions of the doorways and windows. In the lofty structures of Arizona and Chihuahua there is considerable resemblance to the doorways of ancient edifices in Yucatan and other southern states of Mexico.

"The outer coating of the walls is of course different in the arid northern countries from that in the moist regions of the tropics. Elsewhere I have mentioned the plating, with polished slabs, of the walls of Mitla, which was applied, I suspect, not merely for ornamental purposes, but with a practical object. Where summer rains are as violent as under the tropics, a coating of adobe or gypsum would be unable to resist them for any length of time. In the south-west a thinner coat was sufficient; still there is improvement in such coating, from the northern sections to the southern, shown by the finish of the wash applied to the surface.

"I have alluded to the appearance of artificial mounds and artificial platforms or terraces on the Gila, and perhaps also in the Casas Grandes region. It is well known that both of these structures are conspicuous in the ruins of southern and central Mexico. The estufa, however, is a specifically northern feature, and therefore disappears as soon as the climate becomes more equable and finally tropical."

It may be added that, according to Mr. Bartlett, who examined the Casas Grandes in 1850 and illustrated his description with figures, the rooms began to assume here almost the exact form and arrangement in series seen in some of the Yucatec structures.

We also notice the fact that the aggregation, so to speak, of cells as in the pueblo structures is gradually lost as we proceed southward. Marked evidence of this change is seen before we leave southern Arizona, and at Casas Grandes we see the last faint intimation of it, unless we assume that the room series in Yucatan are resultants.

The cliff-dwellings, which are a characteristic feature of the San Juan region of north-eastern Arizona, continue side by side with the other features as we proceed south into Mexico, and are not lost until after we have passed Casas Grandes.

That the series of types is unbroken from the region of the pueblos and cliff-dwellers of Arizona to Casas Grandes is unquestionable. True, there are variations in the features and characteristics, but that they are derived from the same original type is a fair and reasonable presumption. It may also be asserted with a considerable degree of confidence that southward from Quemada the series is continuous to Guatemala. It is admitted that there is a greater variation in this series than in the northern one. This, however, accords precisely with the facts as known and what might have been predicated upon these facts. In other words, the body of emigrants, so to speak, after leaving the region of Quemada, was gradually split into branches and tribes, each moving off into the seat it was found occupying at the coming of the Spaniards. Although each of these divisions would take with it the original or stem pattern, each would gradually modify it and change it according to fancy. Hence, the variations as we move southward, would

be greater than those seen north of that point. There would be no entirely new or different cultures: all were developed from the one original. Had this culture spread northward from the southern area instead of being a gradual development during the movement southward, the examples would not show the rude primary types, but imperfect attempts at a higher and more advanced type, the culture would not spread from the central point until it had become advanced.

No valid reason has been given, nor is it believed can be given, for rejecting the theory that these northern structures are attributable to the ancestors of the civilized tribes of the regions further south, supposing the theory now generally accepted that these tribes migrated from this northern section, be correct. It is admitted that the Nahuatl and Shoshone tribes have been connected socially if not linguistically. It is also admitted that the latter did not move northward from the southern region. Hence, the Nahuatl tribes must have moved from the north southward. It is also generally conceded, or at least intimated, and apparently in accordance with the most reliable data, that the Mayas and Zapotecs, if not derived in the far distant past from the same original stem as the Nahuatl tribes, had long been in intimate association with the latter.

Notwithstanding the advance made by the time the latitude of Quemada was reached, the cause or impetus, or whatever we may term it, which gave rise to the more advanced civilization of the southern section, had not yet been exerted or brought fully into play. The beginning of that architectural art which was to result in the splendid structures of Yucatan and Chiapas had been made, but it is probable that it

was not until the priestly hierarchy was more thoroughly organized and brought into full sway, that the onward march toward that higher culture began in real earnest.

Why there has been such persistent refusal on the part of scholars to accept, as at least possible, the theory that the tradition of the "Seven Caves," or "Seven Ravines" (Chicomoztoc and Tulan Zuiva), refers to the cliff-dwellings or cave-dwellings of north-western Mexico and Arizona, is difficult to account for. There is nothing in this supposition contrary to the traditions, nor to the generally-accepted theory of the course of migrations. The number seven does not necessarily play any particular role in the solution of this problem. Numbers were determined from some incident or circumstance which may or may not be known. Seven may have been selected because of some superstition or because it was understood that seven was the number of tribes belonging to a certain group or stock, or it may have arisen in many other ways. It is therefore immaterial in this relation. The reference therefore in the Nahuatl and Maya traditions to seven caves, although largely mixed with myth, may be interpreted as possibly referring to the cliff- or cave-dwellings, or to this mode of living while in the north. This would be appropriate as explaining the frequent reference in these traditions to darkness, gloom and a sunless condition. It is well known that caves were often resorted to in the southern regions as places for holding religious ceremonies and other purposes. The inner cells of many of the Central American temples are virtually caverns so far as light is concerned. Torchlight was essential to some of their religious ceremonies.

CHAPTER XXIV.

PRIESTS—HIEROGLYPHS—CALENDAR.

No step in advance in art or any other branch of culture is likely to be taken, especially among a comparatively rude people, until some need for that step is felt. Burial originated from the necessity of disposing of the dead, and the stone and wooden coverings, tombs and cells, from the desire to secure the bodies from injury by wild beasts; dwellings, from the need of shelter and security, etc. So, in the more advanced stages of society, forward steps in culture are generally the result of a felt or imagined need therefor. Sometimes accidental discoveries bring into use more efficient implements and processes than those previously employed, but the adoption of these is an evidence of the felt need therefor.

Although it is true, as remarked by Dr. Tylor, that priests are not favorable to changes or novelties in the religious formulas or ceremonies, yet they are ever ready to accept an increase in power or influence, to add to the impressiveness and display of their public ceremonies, and are ever desirous of increasing the size and magnificence of their religious structures. It is to this desire and the power and influence of the priests of Mexico and Central America, the author believes, are to be attributed the rise of civilization and its progress, in these regions, to a higher stage than that attained any-where else in North America.

The influence of the religious sentiment, especially when directed by a strong and well-organized priesthood, is too well known to need any proof here. The power and influence of the priests in Mexico and Central America are also facts too well known to require verification. In Mexico, according to one writer, "the prelacy was as systematic, and its rule as well defined, as in the Church of Rome." The contest which was waged for a time between the warrior class and priests was ultimately decided in favor of the latter; in other words, the prelacy became the ruling power. Among the Mayas and Zapotecs the priestly power was, if possible, more complete than among the Aztecs, the authority of the chieftain or ruler being almost completely dimmed by it. We therefore attribute the rise and progress of the Mexican and Central American civilization chiefly to this priesthood. With their opposition or indifference it could have made no progress. Moreover, the chief advance made is along lines intimately connected with religious ceremonies and priestly needs.

The hieroglyphs were doubtless the work of the priests, few of the people understanding, or being able to interpret or use them. To the priests, therefore, must we ascribe the inscriptions and manuscripts, which, so far as we are able to judge from the little that has been ascertained in regard to them, relate, in a large degree, to religious observances, ceremonies, etc. The calendar system appears also to be based upon, or at least adapted to the religious systems in vogue among the nations which adopted it. We are justified, therefore, in believing that the advance in culture along the lines of art, especially those

of architecture and sculpture, the calendar system and symbolic writing, was due to the priesthood.

It is probable that no decided impulse toward a higher culture was given until a start had been made toward a thorough organization of the priesthood. That a slow and gradual advance was being made in architecture is doubtless true, and it is also doubtless true that, after this beginning, there would have been a further slow growth, even without a decided impulse from the priesthood; but the remarkable advance indicated by the structures and sculptures of the southern section, as compared with the northern monuments, indicates some more potent influence than was exerted in the northern regions.

It must be admitted, although we may be unable to entirely solve the mystery, that there was some cause, some impetus, something which gave rise to the civilization of Mexico and Central America, which did not exist or occur in California or any other part of North America. Mr. Bancroft is doubtless correct in his declaration that this can not be attributed wholly to differences in the physical conditions. It is more likely that the real direct cause is to be found in the complete organization, and strong influence of the priesthood. This, it is true, only serves to throw the investigation one step further back; for the next inquiry will be, why this advance in priestly organization and influence over that of other sections? Although we will not undertake to give any answer to this question, it is possible that a thorough and careful study of what we may, in a broad and comprehensive sense, term the priesthoods or religious organizations of the more northern tribes, beginning with

those of the Pueblos, would furnish a partial explanation. The cult societies of some of these Pueblos described by Mrs. Matilda C. Stevenson in her paper on "The Sia," in the "Eleventh Annual Report of the Bureau of American Ethnology," and those of other Pueblos described in several papers by Dr. Walter Fewkes, may possibly be the beginnings from which the more elaborate organizations of the southern tribes were developed. The latter author mentions a number of somewhat striking similarities between the religious ceremonies of the tribes he studied, and those of the Mexicans and Mayas. As the people among whom he prosecuted his studies were chiefly those of the Hopi or Moki pueblos, people belonging to the great Uto-Aztecan stock, these similarities become important, especially when the caution of this author in advancing theories is considered.

Where the priesthood in the course of the migration southward attained that perfection in its organization, and obtained that power as a distinct body which enabled them to direct the several lines of improvement leading up to the civilization finally reached, can of course never be definitely determined. If the suggestion that the southern system was a development from the northern, should by further study be found probable, this development must of course have been gradual. Although the evidence shows that the great, and apparently rapid advance in civilization after it was once clearly started, was due chiefly to the priesthood, the attempt to determine where this start took place would be in vain.

If the supposition that the Mayas, or at least the eastern division thereof, occupied for a time the re-

gion of Tula (Mexico) and Teotihuacan, and were the authors of some of the works of those localities be correct, we may feel assured that the priesthood had by this time come largely into power as a body; that there was here an organization of some kind. If, as the writer is inclined to believe is true, the Mayas who occupied this region probably with the Totonacas, consisted of the eastern branch which had followed the Huastecas as heretofore suggested, their priesthood must have been organized, and the Palenque and Votan problems become less difficult to solve. The traditions of the other (western) branch indicate that their priesthood did not come fully into power until they reached that Tulan which we suggest was somewhere in or near Chiapas. Here it is said they received their gods. The statement in the Quiche tradition which says: "Truly Tohil is the name of the god of the Yaqui nation who was called Yolcuat Quetzalcoatl," indicates beyond question contact with the Aztecs, though the identification of Tohil with Quetzalcoatl is probably incorrect. The contact of priesthoods is probably implied.

It appears certain, however, that Mayan hieroglyphs did not come into use until the valley of the Usumacinta was reached. The origin of these is difficult to explain, and will probably remain an unsolved problem until explorations shall bring to light some rude beginnings from which they were, or may have been developed.

The Mayan glyphs are of a widely different type from the Mexican, though they may have passed through some of the same stages of growth, but the general consensus of opinion is that the Mayan is the older of

the two classes, and that these two classes have developed independently. As it seems apparent that they were not brought into use until some of the Mayas had reached the Usumacinta valley, it seems possible that they are not older than the Mexican symbols, though the opposite view is generally entertained.

It has been found possible to determine with reasonable certainty the objects from which some few of the Mayan symbols were drawn. These derivations indicate that the symbols had already been brought into use when they were adopted to represent the days, and that considerable advance had been made in hieroglyphic writing. We are compelled, therefore, to admit that the origin of this writing is a mystery we are unable to fully penetrate. The various steps through which several of the characters used had passed before reaching their final forms may be theoretically traced, but monumental evidence on this point is wanting, at least so far as the author is aware. There can be but little if any doubt that their development and use was due to the priests. It also appears that this form of writing was confined to the Mayan tribes, a fact which, considering the intimate relations of these tribes with other stocks, indicates that it had advanced to that stage which prevented its adaptation to other languages. More especially does this appear to be a proper conclusion when we take into consideration the fact that the so-called "Native Calendar" had been adopted by some half a dozen different stocks.

How are we to account for the spread of the complicated calendar system through so many different

and even hostile stocks, as stated in a preceding chapter, when each had necessarily to, or at least did, assign different names to the days and months, and adopted different symbols, so far as these are known to have been brought into use? There seems to be but one answer: it was through the influence of the priests. Nor does this appear to solve the problem, except upon the further supposition that there was some kind of relationship, understanding or intercourse between the priesthoods of the different stocks or tribes, not limited by ethnic lines. It is only by the supposition of "a powerful secret organization," as Dr. Brinton has shown, "extending over a wide area, including members of different languages and varying culture," that the spread of Nagualism can be explained. That the various stocks and tribes, some of which were at constant war with one another, should have adopted the same calendar system, which was especially adapted to the work and office of the priests, except through their influence, seems impossible. Moreover, that influence must have been specially exerted for this purpose and to this end. Is it not possible that this will serve in part to explain the numerous traditions relating to the sudden appearance of priestly civilizers in various sections?

The traditions of the Mexicans and Central Americans regarding the sudden appearance in their midst and as sudden departure of great reformers and civilizers, who were afterward regarded as culture heroes, have long been and still continue to be puzzles, in regard to which students have, as yet, been unable to offer any generally accepted solution. It is Quetzalcoatl among the Mexicans, Votan among the tribes of

the Usumacinta, Cukulcan and Itzamna among the Mayas of Yucatan, and Gucumatz with the tribes of Guatemala.

Some authors attempt to explain these by the solar myth, resolving all these traditional founders into personified Dawn, Lightning, and the like. But as Hutson justly remarks: "We have had abundant evidence that this method of explanation can be pushed too far, and its results have always been too vague to add any thing to our real knowledge of early ethnic life." Is it not possible that these traditional personages were priestly messengers traveling from tribe to tribe to weld together a common brotherhood? Such a supposition would not be more extravagant than that theory which makes of them sun and light myths.

If the statement made by some writers, that war was often waged between Mexican nations by agreement or understanding for the purpose of obtaining captives for sacrifice, be true, it is certain that this was instigated by the priests, and, moreover, indicates some secret relation between the different priesthoods. It is proper, however, to remark that Bandelier questions this.

The division of the year into eighteen months of twenty days each is the most radical change of the system from the usual lunar count, or count by moons. It is generally admitted by scholars who have referred to the subject, that the original Mayan calendar must have been based on the usual lunar count. There is even positive evidence that there was in vogue at the advent of the Spaniards, at least in some sections, a secular month of thirty days, giv-

ing twelve months to the year. In the "Report on the City of Valladolid, written by the Corporation of the city by order of His Majesty and the very illustrious Senor Don Guillen de las Casas, Governor and Captain General, April, 1529," we find the following statement: "They [the Indians] divided the time by months of thirty days, and on the first day of the year, before dawn, every one, including the Alquin [priest], watched for the rising sun and held a great feast on that day." That this change could have come about by any gradual process seems impossible. We are therefore justified in believing that it was arbitrarily made by the priests, or that it was brought into vogue through some foreign influence. Mention of the lunar count and the year of twelve months is also made by other early writers.

Where and in what stock did this calendar have its origin, are questions to which students will probably never be able to give satisfactory answers. If we could decide positively which came into vogue first, the calendar or the symbolic writing, we might give approximately correct answers. That the Mayan hieroglyphs, as has already been stated, did not come into use until the people of this stock had reached the valley of the Usumacinta, may perhaps be confidently asserted. It may also be confidently asserted that the Mexican method of representing days and numbers did not come into use until after the Aztecs had settled in the valley of Anahuac. It is stated in the Cakchiquel Annals, according to Dr. Brinton's translation, that among the tributes they paid at Tulan were "astrological calendars and reckoning calendars." If this refers to the "Native Calendar," it follows that both calendar and

symbols were then in use. However, as we have endeavored to show, the advanced Mayan tribes were already located in the Usumacinta region when the Cakchiquels reached this Tulan. It will perhaps be safe to assume that the various stocks using the calendar had reached substantially their historic seats at the time of its adoption.

That such a time system could have come into use independently in some half-dozen different stocks, relatively at the same time, seems improbable. As its origin is most naturally ascribed to one stock or people, it must have been forced upon other peoples by some strong pressure instigated by the priests, or brought into use through the influence of the priesthood. By the earlier authors it is attributed to the Toltecs, which according to the view herein adopted would be indefinite, but most likely would refer to the Mayas while in central Mexico, or at least before reaching their historic localities. Orozco y Berra, who is followed in this respect by Dr. Seler, expressed the opinion with confidence that it had its origin among the Zapotecs. Dr. Brinton says he has been unable to reach any definite decision on the question, but is inclined to the opinion "that it was the invention of that ancient branch of the Mayan stock who inhabited the present states of Chiapas and Tabasco."

It is probable that the former opinion is the correct one. The evidences of an impress of culture by the Zapotecs upon the Mexicans, or the reverse, have been referred to. The figures recently copied by Prof. Frederick Starr from the Mitla ruins, and published in his "Notes on Mexican Archaeology," show types

corresponding beyond question with those of the Mexicans.

One prominent feature of these figures is the Tlaloc nose—or elephant-like probocis.

It may be that the Zapotecs were the pioneers in Central American civilization. It is certain, as we have seen, that some of the peculiar types found at Mitla appear also at Quemada, a fact which has been noticed by several writers.

The conclusions which seem to be most in accord with the data are:

That the Mayan stock came from the north-west, substantially along the same route followed subsequently by the Nahuatl tribes, and that they had been, at some early day, previous to or soon after entering the area of Mexico, in comparatively close relations with the Nahuatl stock.

That somewhere in central Mexico, one branch, or part of the family led by the Huastecas, broke away from the other part and pushing in advance, in company with the Totonacas, occupied for a time the region embracing the Mexican Tula and Teotihuacan. The Huastecas and Totonacas moved on to the gulf shore, while the remaining portion of this eastern branch passed on southward to the valley of the Usumacinta, a part at least going by way of Tabasco, another portion going directly to the upper portion of the valley. From these colonies the Peten region and the peninsula of Yucatan were peopled. The other branch, after dwelling for a time in the region of Chiapas, scattered in tribes south and south-east to their historic seats.

That the advance in the architectural art began

while they were yet in central Mexico, its rapid progress being due to the influence of the priesthood.

That the use of hieroglyphs among the Mayas began with the colonies who settled on the Usumacinta.

That the calendar probably had its origin with the Zapotecs, and that it spread to the different stocks through the direct influence of the priests.

CHAPTER XXV.

CONCLUSION.

Although it is true, as stated in the opening chapter, that the monuments and relics must be our chief reliance in studying the customs, arts and activities of prehistoric peoples, language must form the chief basis here, as has been found true in the old world, of the theories relating to the more remote periods, when the identification of race or stock is the object in view. The character and types of the monuments and artefacts and to some extent of customs and superstitions, as shown by what has been presented in the preceding chapters, are largely the result of physical environment; hence, in attempts to trace relationship of tribes and peoples and to follow the movements of population in prehishoric times, language must be our chief reliance. But language and monuments, so far as the latter are to be found, should tell the same tale.

The coincident testimony of these two classes of evidence, fortified by other data bearing on the subject, lead to and seem to justify the geographical division of North America, in reference to its archaeology, into the three primary regions which have been outlined. If this conclusion be accepted, at least so far as it relates to the Atlantic and Pacific divisions, it will (leaving out of view the question of origin or race) relieve the study of prehistoric North America of some

hitherto troublesome questions and eliminate some theories still advocated. It will form one important step in the arrangement of the archaeological data of the northern continent.

Led by the dim rays of light the data afford, relying chiefly on language, geographical features and tradition, together with the few historic facts relating to the more recent migrations, the conclusion reached is that the great movements of population in prehistoric times in North America have been southward. Tracing back the streams toward their sources, we have found that the converging point appears to be the inhospitable region stretching from the western shore of Hudson's Bay to the Rocky Mountains. Thence two streams flowed southward: parted by the great treeless plains stretching from the Saskatchewan to the Rio Grande, one moved south along the mountain skirt and passed to the Pacific side, the other going to the Atlantic side. From straying bands seeking localities of more abundant food, which became permanently separated from the parent group, were developed, in all probability, partly by growth and partly by combination, one with another, many, possibly most, of the so-called stocks; others had possibly been differentiated before reaching the continent, if, as is not improbable, the peopling was by the incoming of successive parties along substantially the same route.

However, the reader must keep in mind the fact that there are two theories in regard to the general movements of population in the Atlantic division in prehistoric times, each of which is maintained by strong advocates. One of these is that which has

been followed in this work, the other that which holds that the spread of population has been from the Atlantic border. If the latter theory be adopted, and it be assumed that the Pacific slope was populated from this eastern group, it would seem necessary, from the evidence herein presented in regard to the movements on the Pacific side, to assume that one important stream from the Atlantic side flowed north-westward, at least as far north as the headwaters of the Missouri (and even farther, judging by the movements of the Athapascans), and then turned southward, moving down the western side. For it seems certain that the great plains formed a barrier seldom traversed in prehistoric times except toward their northern extremity. It might perhaps be consistent with this theory to assume that the Mayan group moved southward along the Gulf coast. Although this theory of a dispersion from the Atlantic coast is held by a number of able advocates, the author of this work has been led by his study of the evidence to believe that the Atlantic division was populated from the north-west, and that the Pacific division received its population chiefly from the same region. The reader, however, is left to accept either theory which appears to him to be most in accord with the data which we have presented.

In our attempts to trace back the development of tribes and peoples to more distant eras, we have, when the monuments and other evidence failed us, appealed to language as indicating former relationship, but it is necessary here also to remind the reader that on this point different views are entertained by linguists. On the one side, it is held by some authors that affinity of languages implies racial identity or unity of origin; on the other, it is contended that the theory that the

affinity of languages necessarily implies identity of race is not warranted. It may be stated as evident that where a tribe or people has incorporated into itself elements from another race or stock, as the negroes in the United States, and these elements have adopted the language of that tribe or people, the language will not be an evidence of race. It is probable that the correct theory will be found intermediate between these two, and this position, we notice, has been taken by Mr. A. H. Keane in his recent work on ethnology. Another view, also intermediate, but differing somewhat from any yet presented, and which promises apparently to be more comprehensive in its scope, appears to be foreshadowed by Major J. W. Powell, director of the Bureau of American Ethnology, in his remarks on the Indian linguistic families in his 7th Annual Report. He says:

"The opinion that the differentiation of languages within a single stock is mainly due to the absorption of materials from other stocks, often to the extinguishment of the latter, has grown from year to year as the investigation has proceeded. Wherever the material has been sufficient to warrant a conclusion on this subject, no language has been found to be simple in its origin, but every language has been found to be composed of diverse elements. The processes of borrowing known in historic times are those which have been at work in prehistoric times, and it is not probable that any simple language derived from some single pristine group of roots can be discovered."

Our allusions, therefore, to the inference which may be drawn from affinity in language as evidence of migrations must be taken only as indicative of

former intimate relationship of some kind, not necessarily racial, for affinity in languages necessarily implies former intimate relationship of some kind.

That the chief stream on the Pacific side had its source east of the Rocky Mountains in the region mentioned seems likely from what has been shown in regard to the general course of migration so far as it can be traced. One puzzling feature of the California and Oregon coast appears to receive at least a partial explanation by this theory of movements on the western side of the continent. We allude to the large number of diminutive stocks, as heretofore mentioned, crowded into this narrow shore strip.

The explanation of the problem appears to be found in the position of the minor Athapascan offshoots located along the coast of Oregon and California. Although the later movements of these branches, which brought them to their historic homes, have taken place within modern times, the date when some of them removed from their priscan habitats probably belongs to the prehistoric era, though comparatively recent. The other minor stocks are probably fragments of other families from which they separated at a much earlier date, which, under the influence of changed surroundings and through intermarriages and combinations with other bands, have formed new groups and new languages. The following remarks by Dr. Gibbs, who is considered an authority on the Indian tribes of this region, may be appropriately quoted here:

"If I may hazard a conjecture at present, it is that the Tah-kali [Dené] and Selish families, with perhaps the Shoshone and some others, originated east of the Rocky Mountains; that the country between that

chain and the great lakes has been a center from which population has diverged; that these two tribes crossed by the northern passes of the mountains; and that their branches have since been pushing westward and southward. Whether the southern branches of the Tah-kali have been separated and driven on by the subsequent irruption of the Selish, or whether they have passed over their heads, can, perhaps, be ascertained on a severe comparison of the different dialects into which each has become divided; it being reasonable to infer that those which differ most from the present are the oldest in date and emigration.

"The route of the Selish has obviously been along the courses of the two great rivers, the Frazer and the Columbia. By the former, they seem to have penetrated to the sea, while on the latter they were stopped by the Sahaptin and the Tsinuk. Some branches undoubtedly crossed the Cascade range, at different points, to the Sound, and the country intermediate between that and the Columbia. And the Tilamuk have overstepped that boundary and fixed themselves on the coast of Oregon. The southern limit of the Tah-kali is not yet ascertained. Mr. Hale identified the Umkwa as an offshoot. Lieutenant Kautz has lately shown the Tu-tu-ten to be another, and it is possible that some of the California languages may also be assimilated. Dr. Newell states that, since he was first in the Indian country, all the great tribes have been gradually breaking up into bands. Whenever two chiefs attain about an equality of power and influence, jealousies arise, which lead to a separation of the tribe. These are formed by many causes, the chattering of the women, of course, among

others. Before the introduction of firearms, the range of the different tribes was more limited than now. They did not travel so far from their own country. This last is less applicable to the coast tribes than to those of the interior. The former are, however, more split up, and those of the Sound country, perhaps, most of all. The influence possessed even by those claiming to be head chiefs has become almost nothing; and in case of any disagreement in a band, the dissatisfied party move off to a little distance and take the name of the ground they occupy, or any one desirous of establishing a band on his own account induces a party of his immediate followers to accompany him, and start, as it were, a new colony. It is to this separation, and to the petty hostilities which often grew out of it, that we must mainly attribute the diversity of dialects prevailing."

The southward movement was a slow process, requiring possibly thousands of years, during which streams were split into branches, while others perhaps coalesced. However, in studying the history and migrations of the aborigines in prehistoric times, we must disabuse our minds of the idea of a dense population. We have spoken in the preceding chapters of the "growth and swelling of the mass" in the terms used by writers in relation to the movements of peoples in the old world, yet the idea obtained is likely to prove erroneous without explanation, as the usual estimate of our native population is erroneous. The native population of the Atlantic division was probably at no time as great in numbers as has been supposed by those who have not carefully investigated the subject. Detached villages scattered over a large

area were necessary to a people depending on the chase alone for subsistence; and when the country was clear before them, bands would continue to wander farther and farther from each other, thus by long isolation and the influence of changed physical conditions giving rise to new tribes and stocks and various customs. It is therefore in this sense the growth and expansion of the native population, while depending on the chase, is to be understood. The Indians would have considered Illinois crowded had it contained one-twentieth the number of souls now living in the city of Chicago; and Pennsylvania overstocked with a population of fifty thousand or even forty thousand.

As more congenial climes were reached in their movement southward, and cultivation of the soil began, the tribes became more and more sedentary and the arts developed. The discovery of maize and its use as a food plant was probably one of the most potent agencies in bringing about this sedentary condition. Its use crept slowly northward against the tide, changing nomads and hunters, at least partially, into settled agricultural tribes. The strong families occupied the interior choice districts, pressing the older, weaker and broken stocks to the shores.

Moving southward from the cold and inhospitable sections of the north, it is not until we reach the more favored districts, where agriculture was resorted to as a partial means of subsistence, that monuments indicating an advanced culture appear. It is in Ohio, in the lower Mississippi valley and the Gulf states of the mound section—regions of richest soil and best adapted to agriculture—that the most stately mounds and imposing earthworks are found. Moving south-

ward on the Pacific side it is in the mild climate of Mexico and Central America, the land of maize and tropical fruits, we find evidences of the most advanced civilization. Wisconsin or the effigy-mound region possibly forms an exception to this rule, yet some of the tribes of the southern half of that state, where the chief works are found, may have entered the agricultural stage at the time they were constructed, nevertheless the objects imitated indicate that they were still in the hunting state, although they must have been to a large extent sedentary.

Development of culture appears to have been in some degree retroactive, that is to say, although the unfolding seems to have been from north toward the south, yet the more advanced culture seems to have moved backward, to some extent, on its pathway. What appear to be evidences of this are found in the mound area where a few large pyramidal mounds of the true southern type are found north of the Ohio in Illinois and Indiana, and strange to say, in one instance at least, combined with a northern type which seems to have been developed in and was confined almost exclusively to the limits of Wisconsin. The same thing appears to have been true to some extent in the Pacific division, especially in regard to certain customs and religious ceremonies. As the cultivation of maize extended northward against the stream, it carried with it some new arts and customs which originated in more southern climes. It is evident, however, that arts and customs and even superstitions, resulted to a considerable extent from physical conditions. This is shown by the fact that the architecture, designs and customs of particular districts, which are

and have long been inhabited by widely different stocks, often present a general similarity. This broad resemblance, or, as it were, uniform coloring or shading of various forms or types, is due, as a general rule, to the physical conditions; as, for example, in the Pueblo section, and California.

No evidence of buildings of stone, adobe or burned brick has been found in the Atlantic division. Wood, which was abundant in most sections, supplied material for all the structures their customs required. It is true that the early mound explorers speak of burned brick found in southern tumuli, but more recent examinations have shown the material to be but the burnt plastering of dwellings consumed by fire. On the Pacific side, adobe was used as a building material from Arizona to Oaxaca, and stone was the chief material of structures from New Mexico to the Isthmus. This difference is of course to be attributed in a large degree to the differences in the physical conditions of the two sections. That stone, though it might be laid up rudely and undressed, and adobe would be used in the construction of dwellings in the arid and treeless areas of New Mexico and Arizona, might reasonably be surmised in advance of evidence.

Judging by the difference in the advance made toward civilized life, the character of the monuments and the deeper covering of earth and rubbish over many of the ruins of the southern sections of the Pacific division, the reasonable conclusion seems to be that the latter was peopled in advance of the Atlantic division. Although intercourse between the two divisions appears to have been very limited, there is some evidence that a few designs in art found their

way from the Pacific into the Atlantic division, but none, so far as the author is aware, that any traveled in the opposite direction.

As this work is limited to the archaeology of North America, of which only a brief and, in some respects, incomplete notice has been presented, no allusion to South American antiquities has been made. However, as the conclusion reached in regard to the possibility that the latter continent was peopled from the former will have an important bearing on some of the problems discussed, the following suggestions are presented:

Although we have not discussed the origin of man in America, it is apparent from the conclusion reached in regard to migrations that the evidence adduced points to the extreme north-west Pacific coast as a probable point of entry into North America. Should this conclusion, which corresponds with a widely prevailing, though it must be admitted by no means universal, opinion of the present day, be accepted, it does not follow as a necessary inference that South America was peopled from the same source, or by the same route. On the contrary, a careful consideration of the data points, or appears to point, rather to the opposite conclusion. The supposition that the southern continent was peopled from the northern demands an immense stretch of time that seems incompatible with the archaeological features of the latter. The comparative age of the monuments of Peru and those of Central America, as estimated by the more conservative students, will not justify the assumption that the civilization of the former region was carried southward

from the latter. Moreover, the antiquities and languages of the Isthmian region north to the borders of Nicaragua indicate a northward movement to this point, where it seems to have been met by the movement from the north. It appears also to be generally conceded that the West Indies were peopled from the southern continent. On the other hand, there is no evidence, archaeologic or linguistic, of a northern element in the southern continent. Peruvian architecture was peculiar and imposing, and shows no trace of influence from Central America or Mexico. Slight indications of South American or West Indian influence are claimed to have been discovered in southern Florida, but a study of the data so far as made leads apparently to the conclusion that this was the result of mere contact, and not from a northward movement of population, the people even of the Keys, as claimed by some authorities, pertaining to the northern races. Although the attempt to determine the length of time man has lived in North America will be a mere guess and nothing more, there is no apparent reason for carrying it back beyond a date necessary for the development of the various tribes, and possibly most of the stocks.

It is possible, though the proof is not yet sufficient to gain general acceptance, that there has been prehistoric contact on the western coast of Mexico with people from the Pacific islands or south-eastern Asia. While these pages are being written, news comes of the discovery in the state of Guerrero, on the southwest coast of Mexico, of several remarkable groups of ruins showing an advanced stage of culture. Among the ruins are remains of large temples, a tab-

let with hieroglyphs, the character, however, not stated, a lofty arch, etc. Should these prove to be of the character indicated, they may have some bearing on the question of the origin of this civilization. But the utmost that can be anticipated in this direction is proof of foreign influence on the native civilization already in the process of development.

Although our treatise can claim to be nothing more than an outline of the subject of which it treats, yet enough has been presented to show that North America offers an archaeological field which is yet to yield a rich harvest to antiquarian research, a field which has been as yet but little worked except in some few districts, but well deserves to be thoroughly cultivated. This becomes manifest when it is known that the most extensive group of pyramidal mounds in the Gulf States, a group supposed to mark the site of one of De Soto's halting places, remains undisturbed except by the plow, and that the largest group on the western bank of the Mississippi is yet unexplored ; and is emphasized when is added the further statement, confirmed by abundant evidence, that there are hundreds of undisturbed groups of ruins in Mexico and Central America, the thorough exploration of which would enable the archaeologist to solve more than one of the unsettled problems relating to that region. It is but recently that the writer of this work was informed that there are ruins along the Rio Panuco which bear the indications of advanced Mayan art, and which, if explored, might settle the doubtful questions regarding the Huastecan offshoot from the great Mayan stock.

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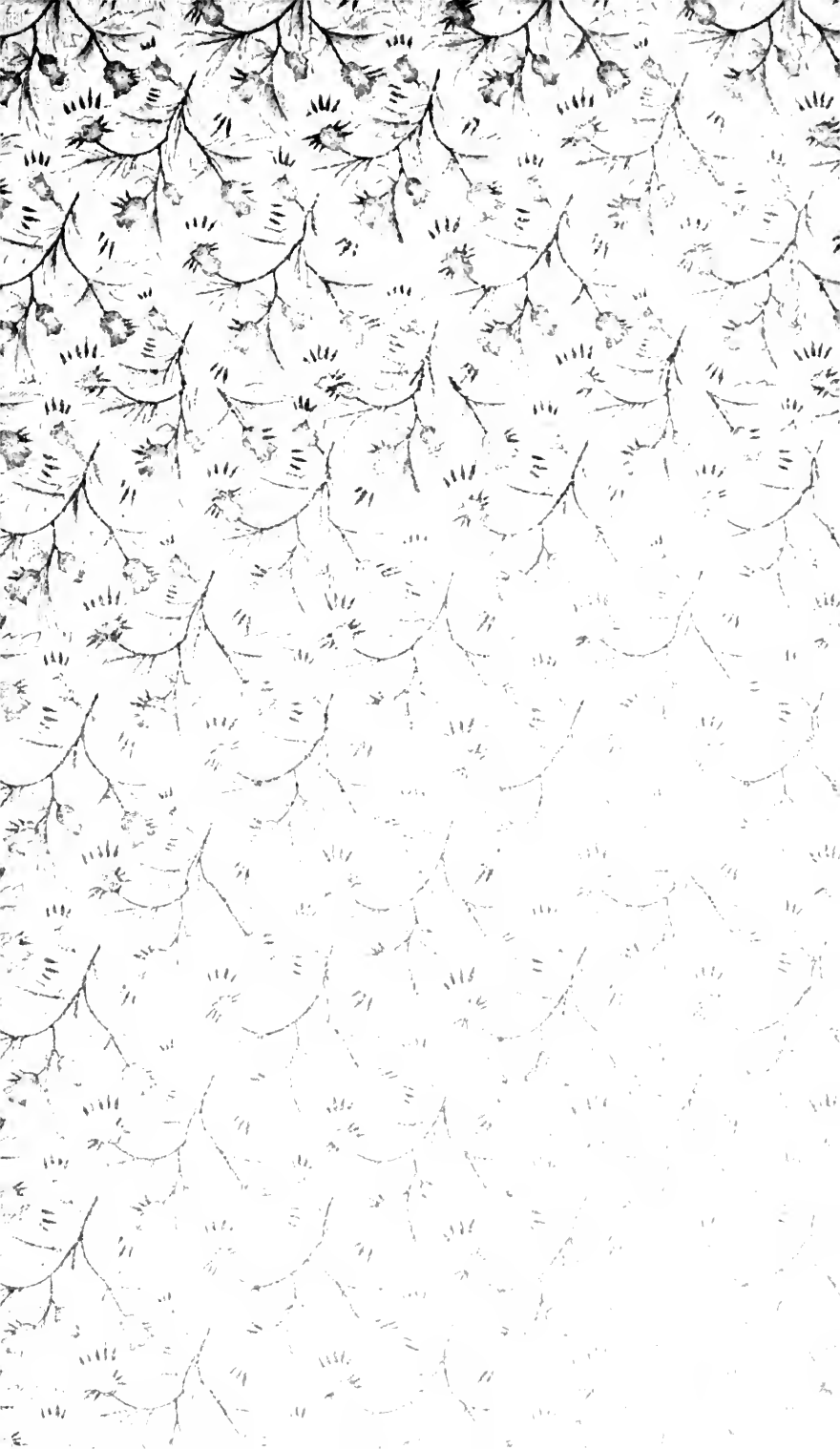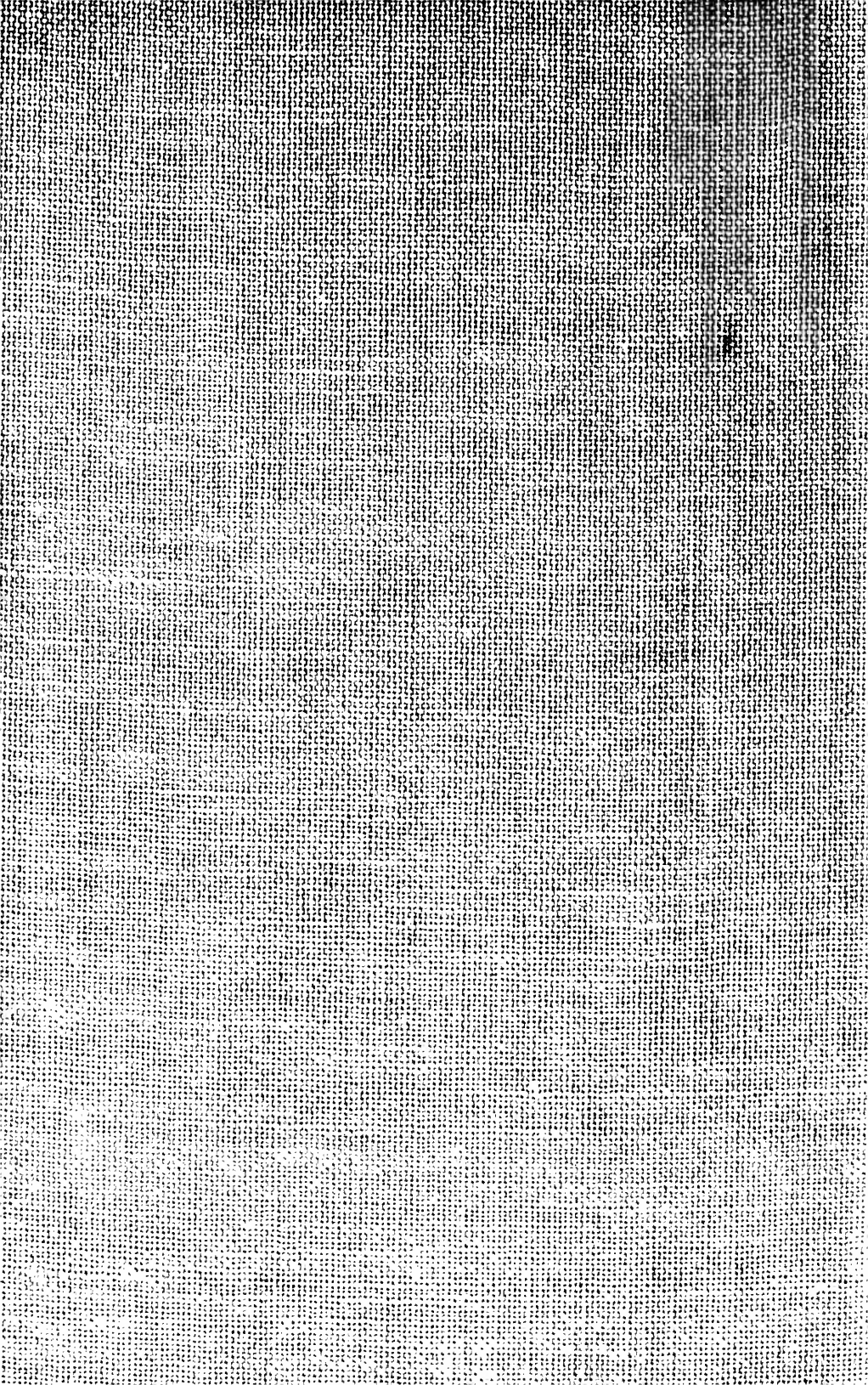
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